FCC Test Report

FCC Part 22, 24
CDMA, WCDMA

Model #: DR800SG

FCC ID: NCMOMO0491-I

IC No.: 2734A-MO0491

TEST REPORT #: EMC_CETEC_035_09501_FCC22_24
DATE: 2009-11-24

ACCREDITED
TESTING LABORATORY
CERTIFICATE # 2135.01

Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Test Lab
LAB CODE 20020328-00

FCC listed: A2LA accredited

IC recognized # 3462B

***CETECOM* Inc.**
411 Dixon Landing Road ◆ Milpitas, CA 95035 ◆ U.S.A.
Phone: + 1 (408) 586 6200 ◆ Fax: + 1 (408) 586 6299 ◆ E-mail: info@cetecomusa.com ◆ http://www.cetecom.com
CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686
Board of Directors: Dr. Harald Ansorge, Dr. Klaus Matkey, Hans Peter May

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1 Assessment

The following is in compliance with the applicable criteria specified in FCC rules Parts 2, 22 and 24 of Title 47 of the Code of Federal Regulations.

Company	Description	Model #
IREX Technologies	**Electronic Book**	**DR800SG**

Technical responsibility for area of testing:

Date	Section	Name	Signature
2009-11-24	**EMC & Radio**	**Marc Douat (Test Lab Manager)**	Marc Douat I am approving this document

This report is prepared by:

Date	Section	Name	Signature
2009-11-24	**EMC & Radio**	**Marc Douat (Test Lab Manager)**	Marc Douat I am the author of this document

The test results of this test report relate exclusively to the test item specified in Identification of the Equipment under Test. The CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM Inc USA.

The test results of this test report relate exclusively to radiated measurement only. Radio module used in this product has been previously certified under its own FCC and IC ID.

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	**CETECOM Inc.**
Department:	**EMC**
Address:	**411 Dixon Landing Road Milpitas, CA 95035 U.S.A.**
Telephone:	**+1 (408) 586 6200**
Fax:	**+1 (408) 586 6299**
Responsible Test Lab Manager:	**Heiko Strehlow**
Responsible Project Leader:	**Marc Douat**

2.2 Identification of the Client

APPLICANT	
Applicant (Company Name)	**Option N.V**
Street Address	**Gaston Geenslaan 14**
City/Zip Code	**B-3001 Leuven**
Country	**Belgium**
Contact Person	**Thomas Gulinck**

2.3 Identification of the Manufacturer

Manufacturer's Name:	**IREX Technologies BV**
Street Address:	**High Tech Campus 9**
City/Zip Code	**NL-5656 AE Eindhoven**
Country	**Netherlands**

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Marketing Name of EUT (if not same as Model No.)	**DR800SG**
Model No.	**DR800SG**
FCC-ID	**NCMOMO0491-I**
Frequency Range:	**824.2MHz – 848.8MHz** **1850.2MHz – 1909.8MHz**
Type(s) of Modulation:	**QPSK, CDMA**
Antenna Type/gain:	**Internal**
Max. Output Power:	**ERP CDMA 850: 18.9 dBm 77.62 mW** **EIRP CDMA PCS: 25.5 dBm 354.81 mW** **ERP EVDO 850: 19.3 dBm 85.11 mW** **EIRP EVDO PCS: 27.3 dBm 537.03 mW** **ERP FDD5: 17.7 dBm 58.88 mW** **EIRP FDD2: 21.4 dBm 138.04 mW**

3.2 Subject of Investigation

All testing was performed on the EUT listed in Section 3. The EUT was maximized in the X, Y, Z positions, all data in this report shows the worst case between horizontal and vertical polarization for above 1GHz.

The objective of the measurements done by Cetecom Inc. was to measure the performance of the EUT as specified by requirements listed in FCC rules Parts 2, 22 and 24 of Title 47 of the Code of Federal Regulations.

Only CDMA and WCDMA modes are considered in this report.

The EUT is battery operated and no AC Adapter is supplied. No AC Line Conducted Emissions were performed.

4 Measurements

4.1 RF Power Output

4.1.1 FCC 2.1046 Measurements required: RF power output.

Power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on circuit elements as specified. The electrical characteristics of the radio frequency load attached to the output terminals when this test is made shall be stated.

4.1.2 Limits:

4.1.2.1 FCC 22.913 (a) Effective radiated power limits.

The effective radiated power (ERP) of mobile transmitters must not exceed 7 Watts.

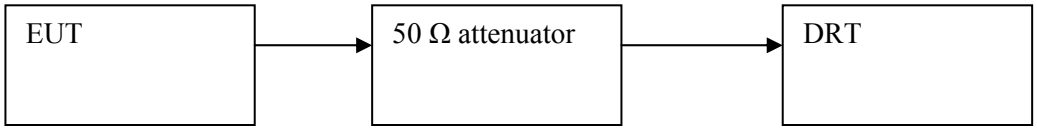
4.1.2.2 FCC 24.232 (b)(c) Power limits.

(b) Mobile/portable stations are limited to 2 Watts effective isotropic radiated power (EIRP).
(c) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms equivalent voltage. The measurement results shall be properly adjusted for any limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement over the full bandwidth of the channel.

4.1.3 Conducted Output Power Measurement procedure:

Based on TIA-603C 2004

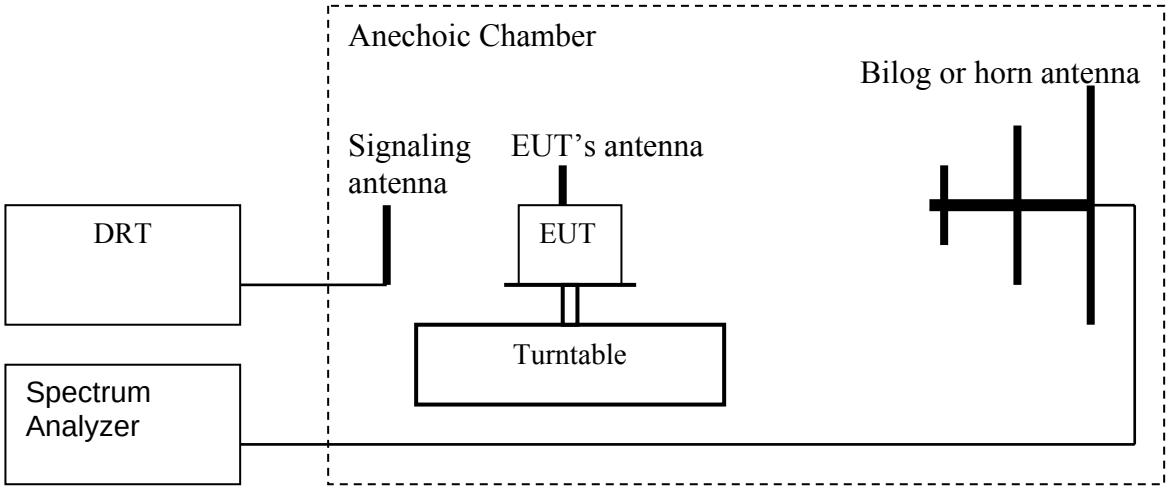
2.2.1 Conducted Carrier Output Power Rating



1. Connect the equipment as shown in the above diagram. A Digital Radiocommunication Tester (DRT) is used to enable the EUT to transmit and to measure the output power.
2. Adjust the settings of the DRT to set the EUT to its maximum power at the required channel.
3. Record the output power level measured by the DRT.
4. Correct the measured level for all losses in the RF path.
5. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

4.1.4 Radiated Output Power Mmeasurement procedure:

Based on TIA-603C 2004
2.2.17.2 Effective Radiated Power (ERP) or Effective Isotropic Radiated Power (EIRP)



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a vertical orientation.
2. Adjust the settings of the Digital Radiocommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to the channel frequency. Set the analyzer to measure peak hold with the required settings.
4. Rotate the EUT 360°. Record the peak level in dBm (**LVL**).
5. Replace the EUT with a vertically polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS)**. **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the ERP using the following equation:
   ERP (dBm) = **LVL** (dBm) + **LOSS** (dB)
8. Determine the EIRP using the following equation:
   EIRP (dBm) = **ERP** (dBm) + 2.14 (dB)
9. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band. **Spectrum analyzer settings = rbw=vbw=5MHz**

(**note:** Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4, 7 and 8 above are performed with test software.)

4.1.5 ERP Results 850MHz band:

USED RBW= 5 MHz VBW= 5 MHz

Power Control Level	Burst Peak ERP
5	≤38.45dBm (7W)

Frequency (MHz)	Effective Radiated Power (dBm)	
	CDMA2000	EVDO
824.7	18.3	18.4
836.52	18.9	18.2
848.2	18.4	19.3

Frequency (MHz)	Effective Radiated Power (dBm)
	UMTS FDD5
826.4	16.4
836.6	17.7
846.6	17.7

4.1.6 EIRP Results 1900 MHz band:

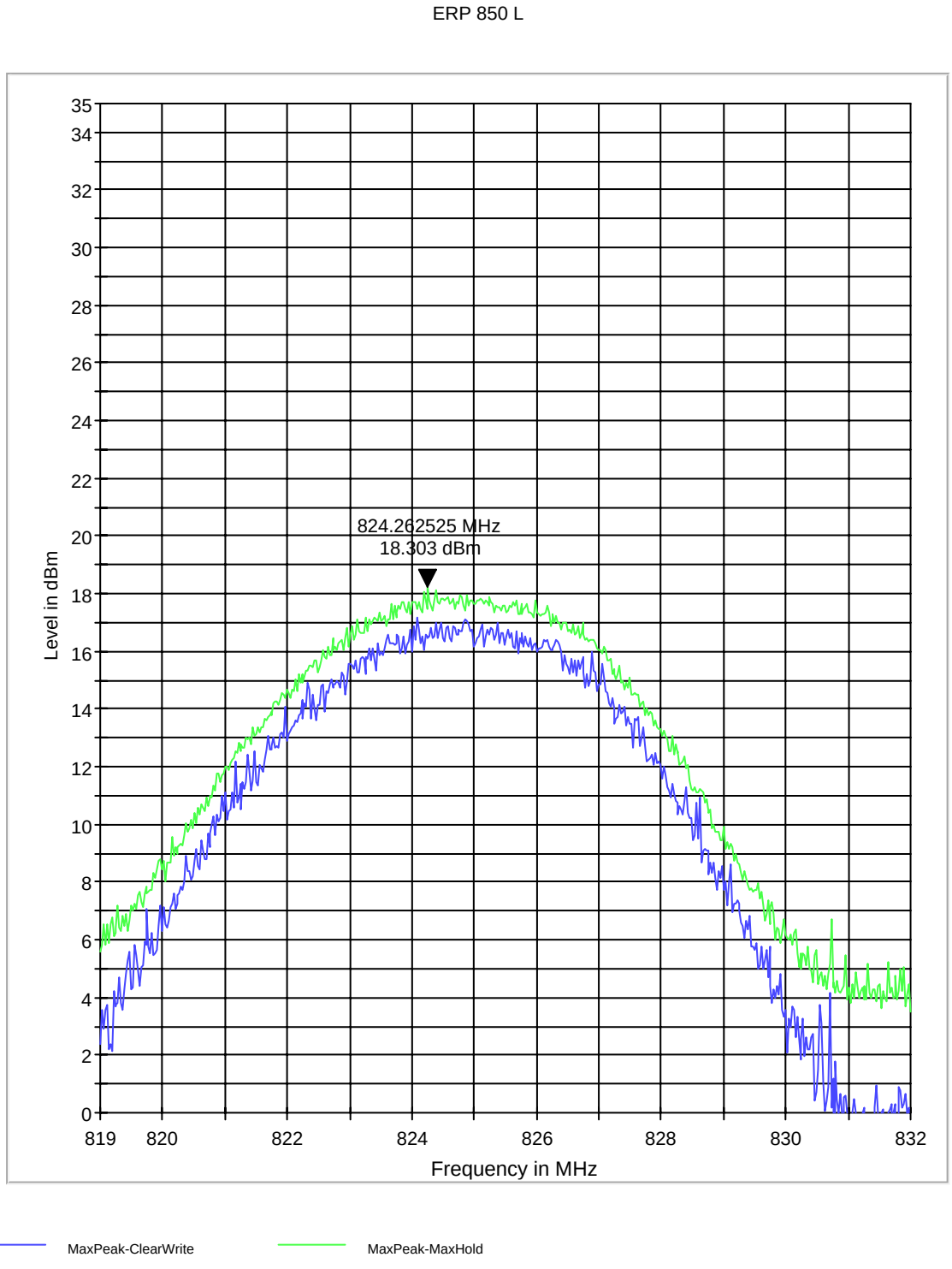
USED RBW= 5 MHz VBW= 5 MHz

Power Control Level	Burst Peak EIRP
0	≤33dBm (2W)

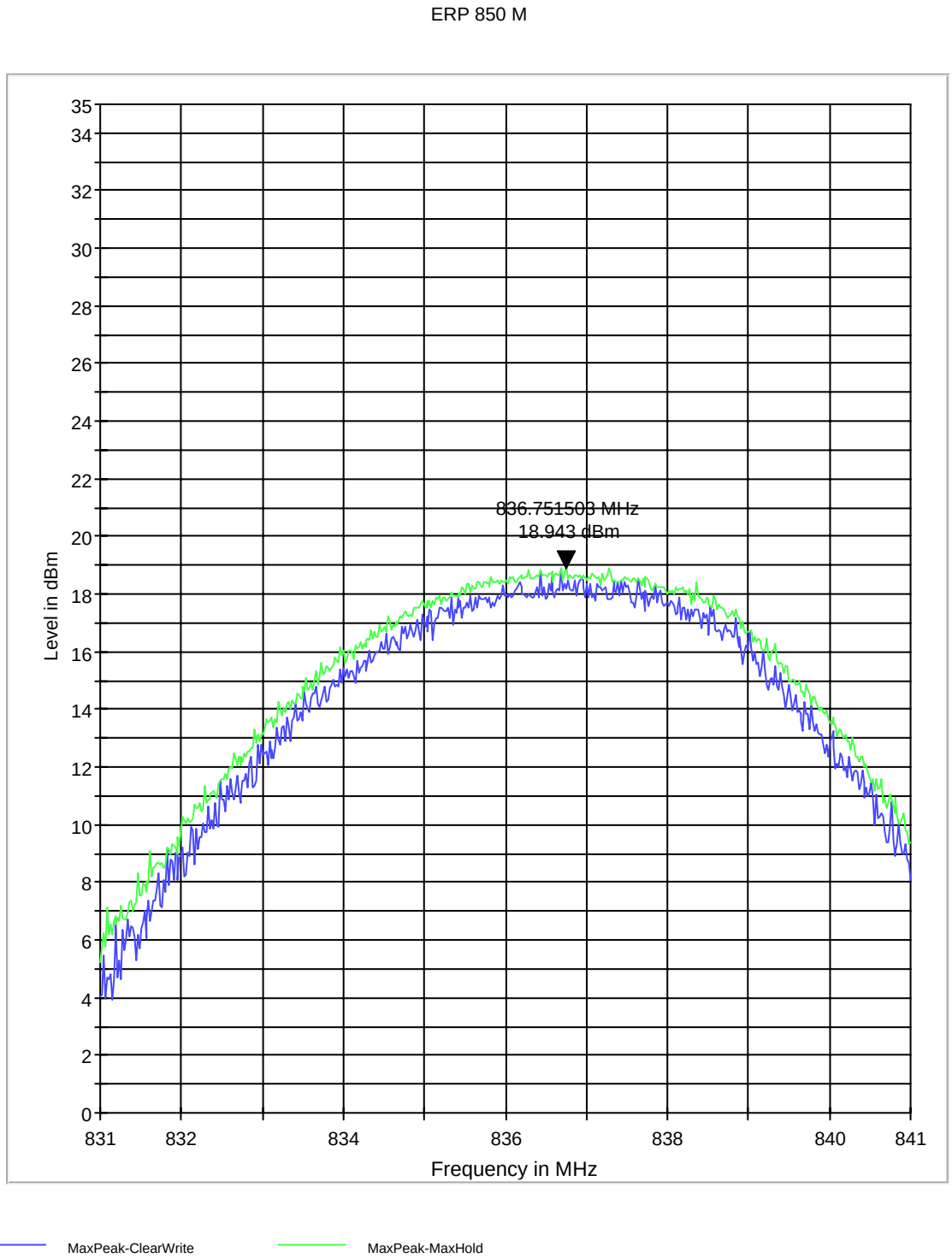
Frequency (MHz)	Effective Isotropic Radiated Power (dBm)	
	CDMA2000	EVDO
1850.7	25.3	27.3
1880.0	25.3	24.9
1909.2	25.5	24.1

Frequency (MHz)	Effective Isotropic Radiated Power (dBm)
	UMTS FDD2
1852.4	19.2
1880	19.5
1907.6	21.4

ERP (CDMA 850) CHANNEL L §22.913(a)



ERP (CDMA 850) CHANNEL M §22.913(a)



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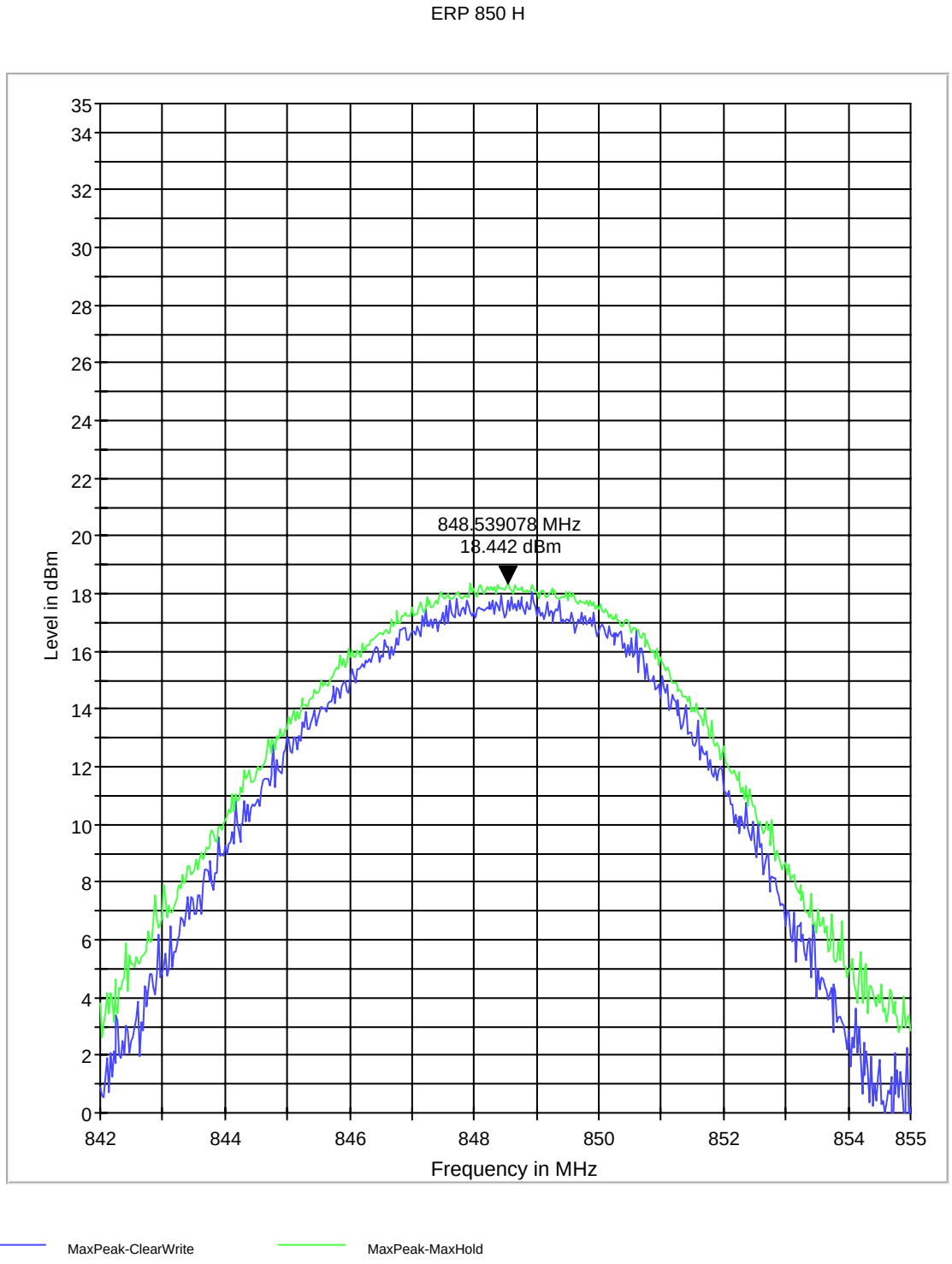

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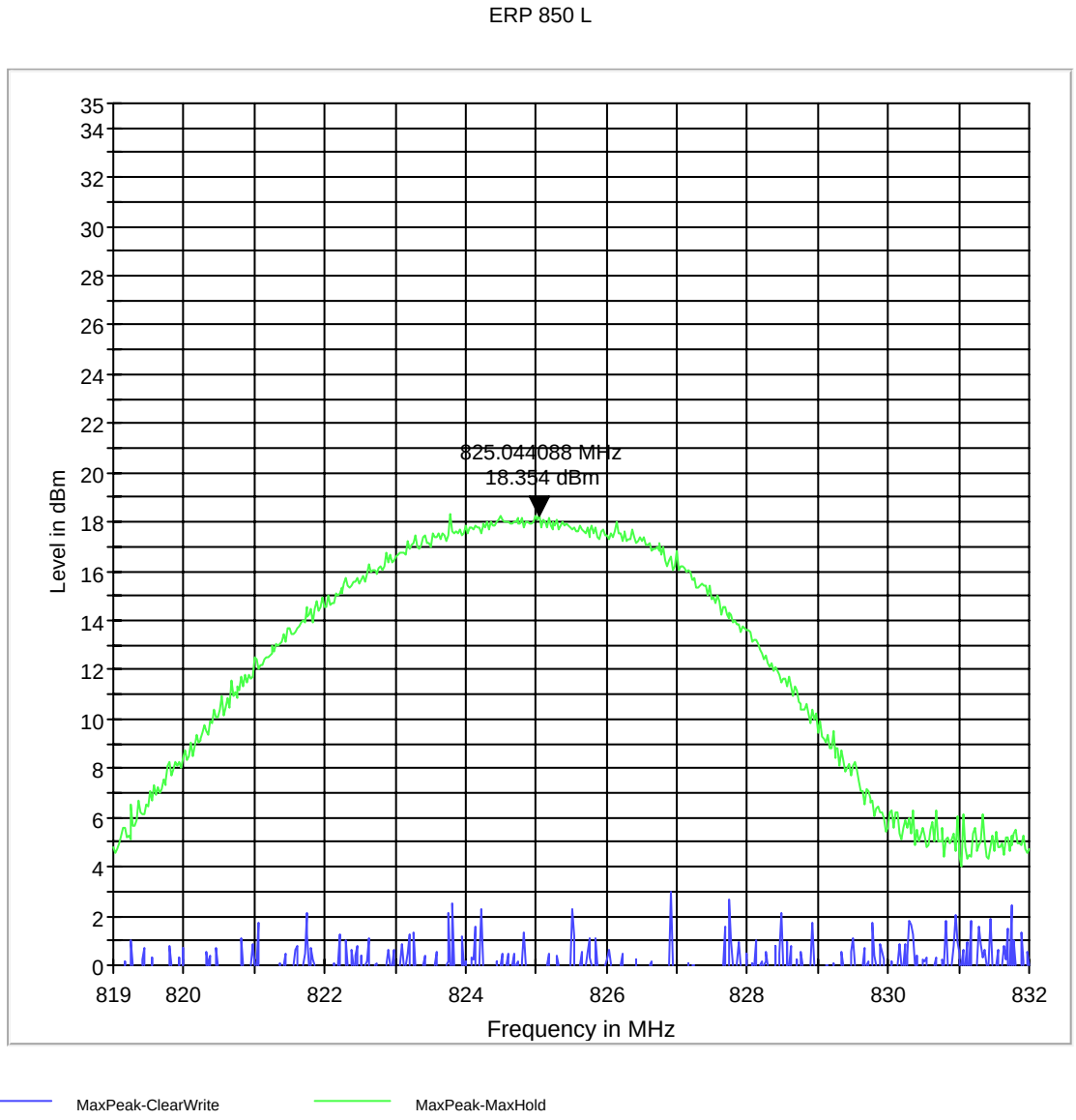

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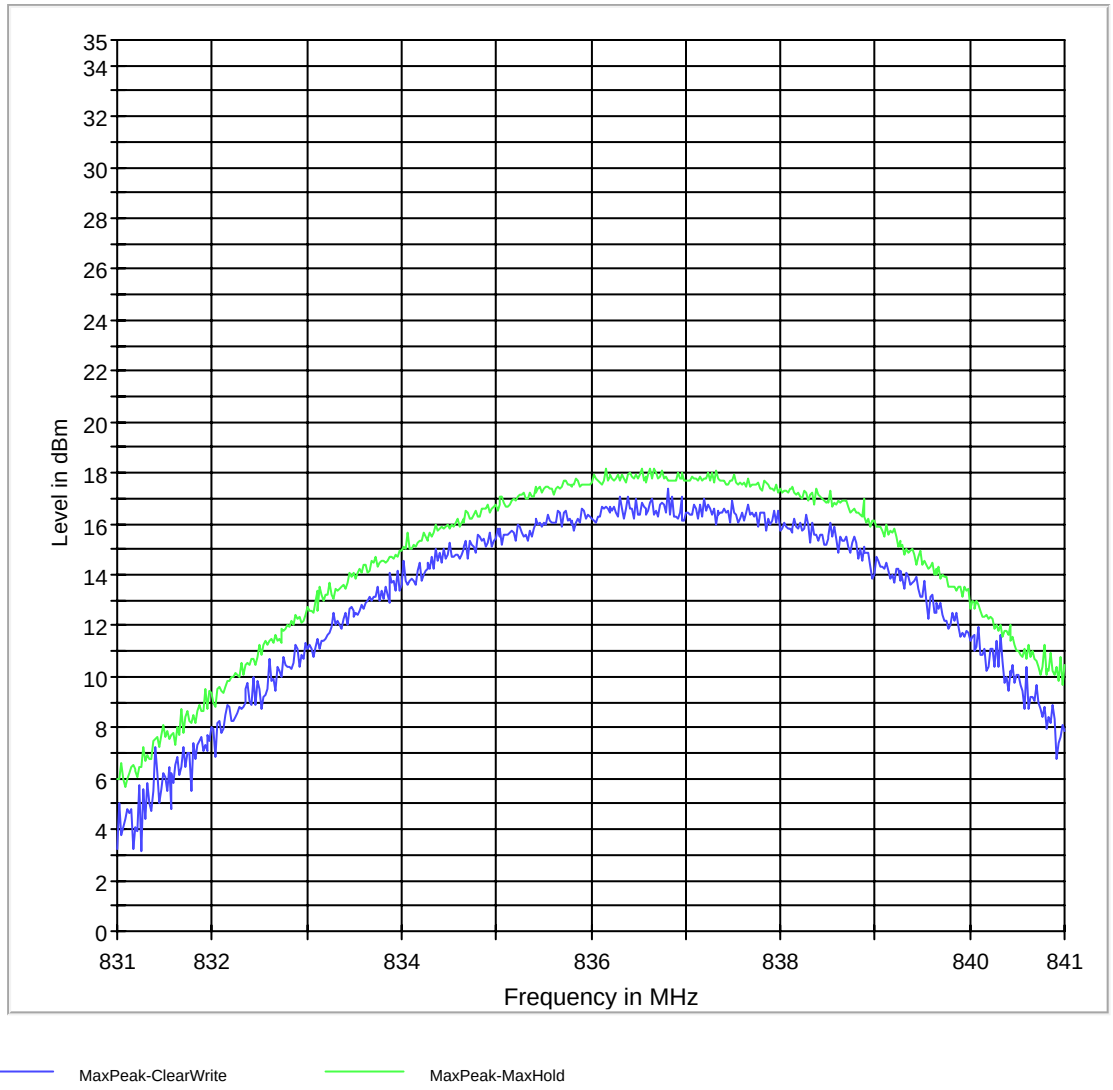

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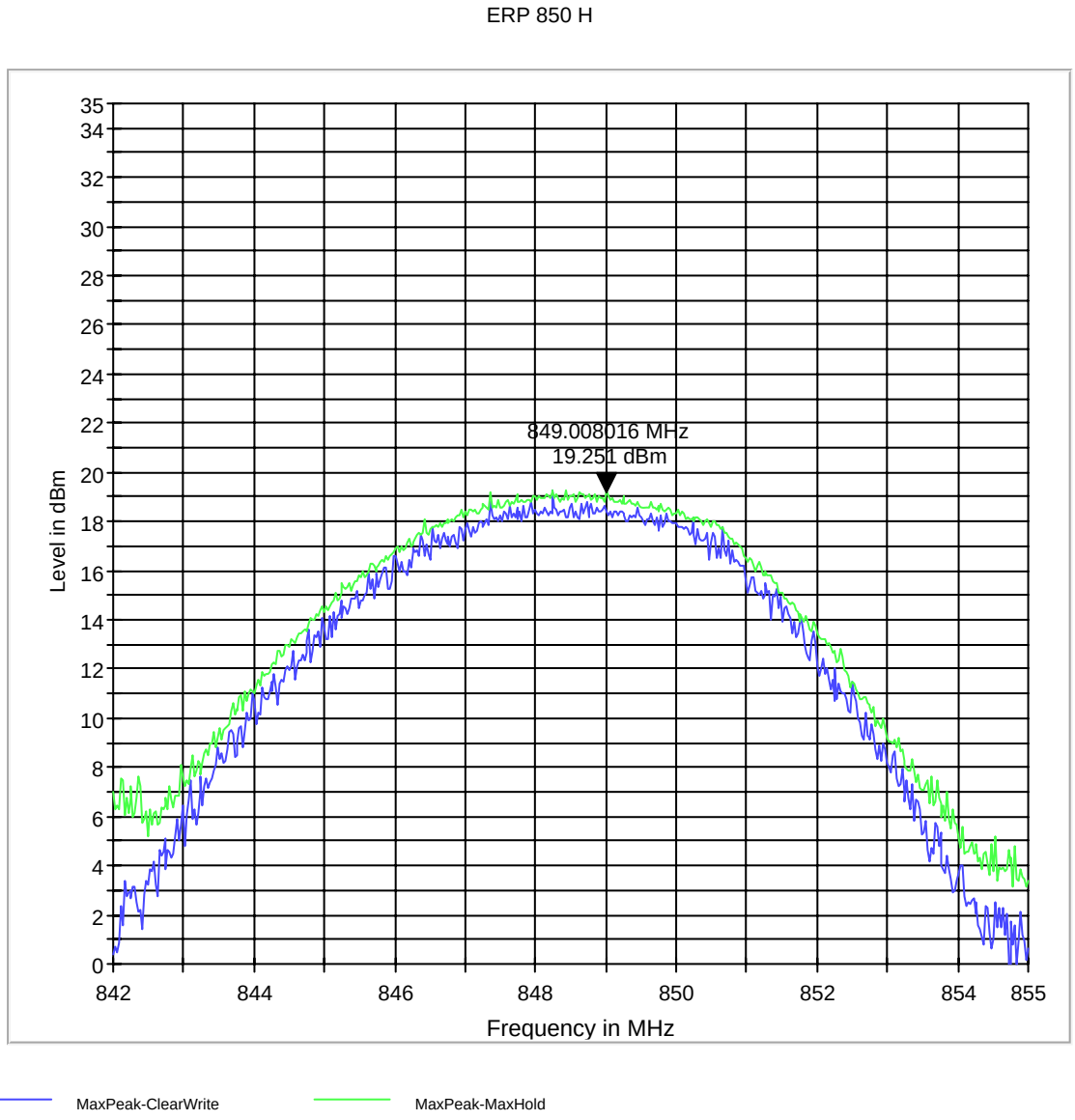
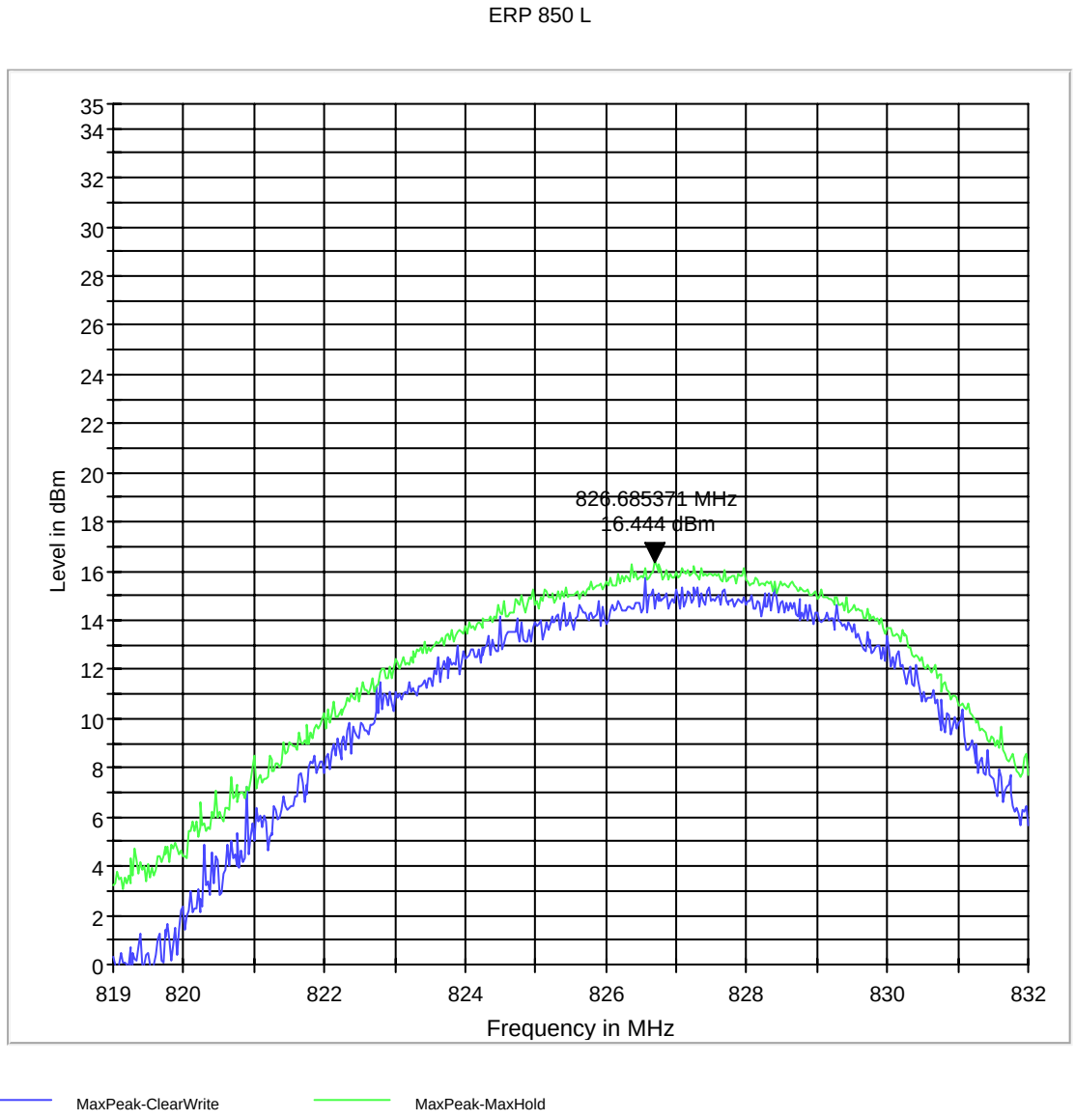
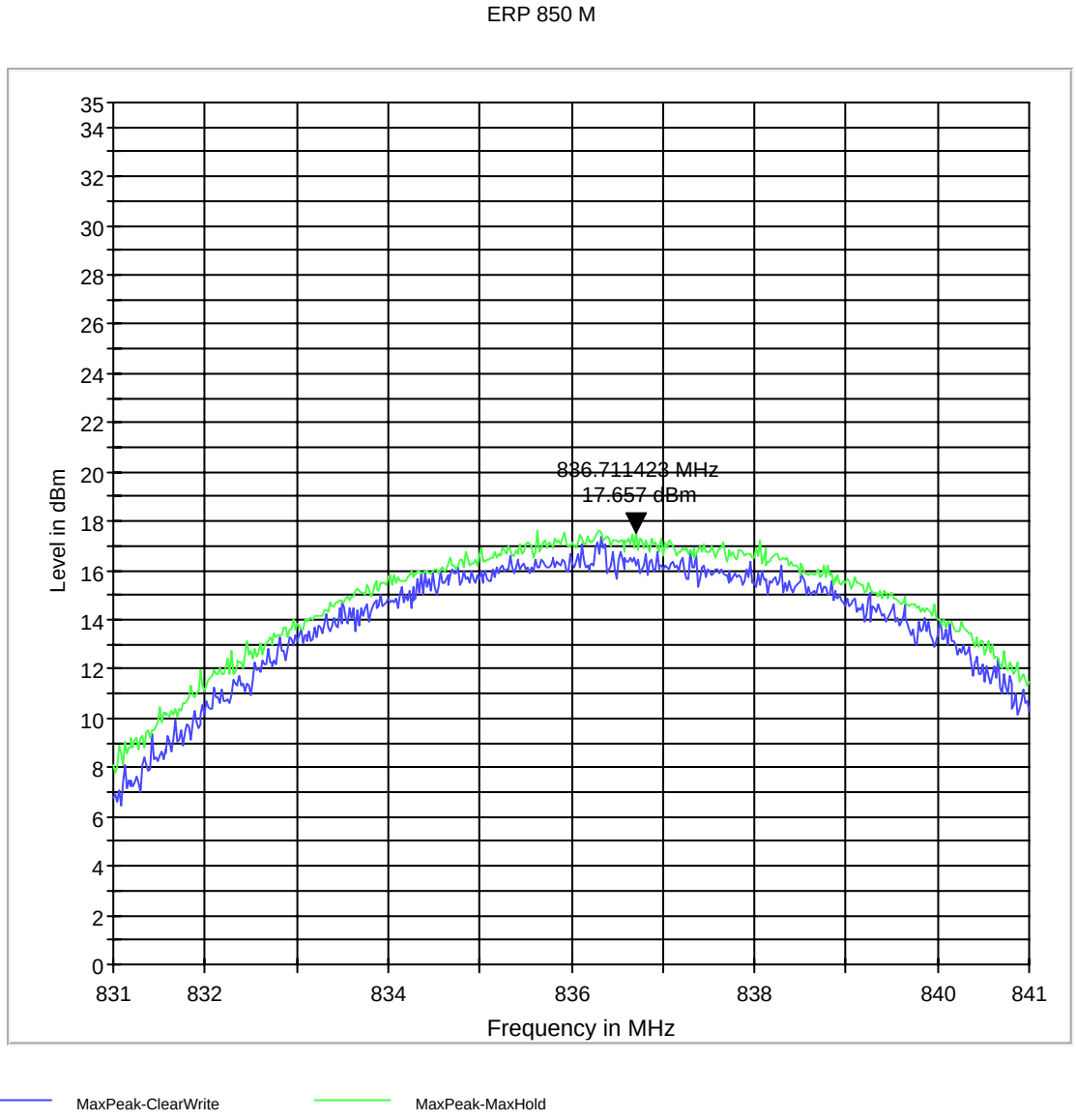


ERP (UMTS FDD5) CHANNEL 4132 §22.913(a)



ERP (UMTS FDD5) CHANNEL 4183 §22.913(a)



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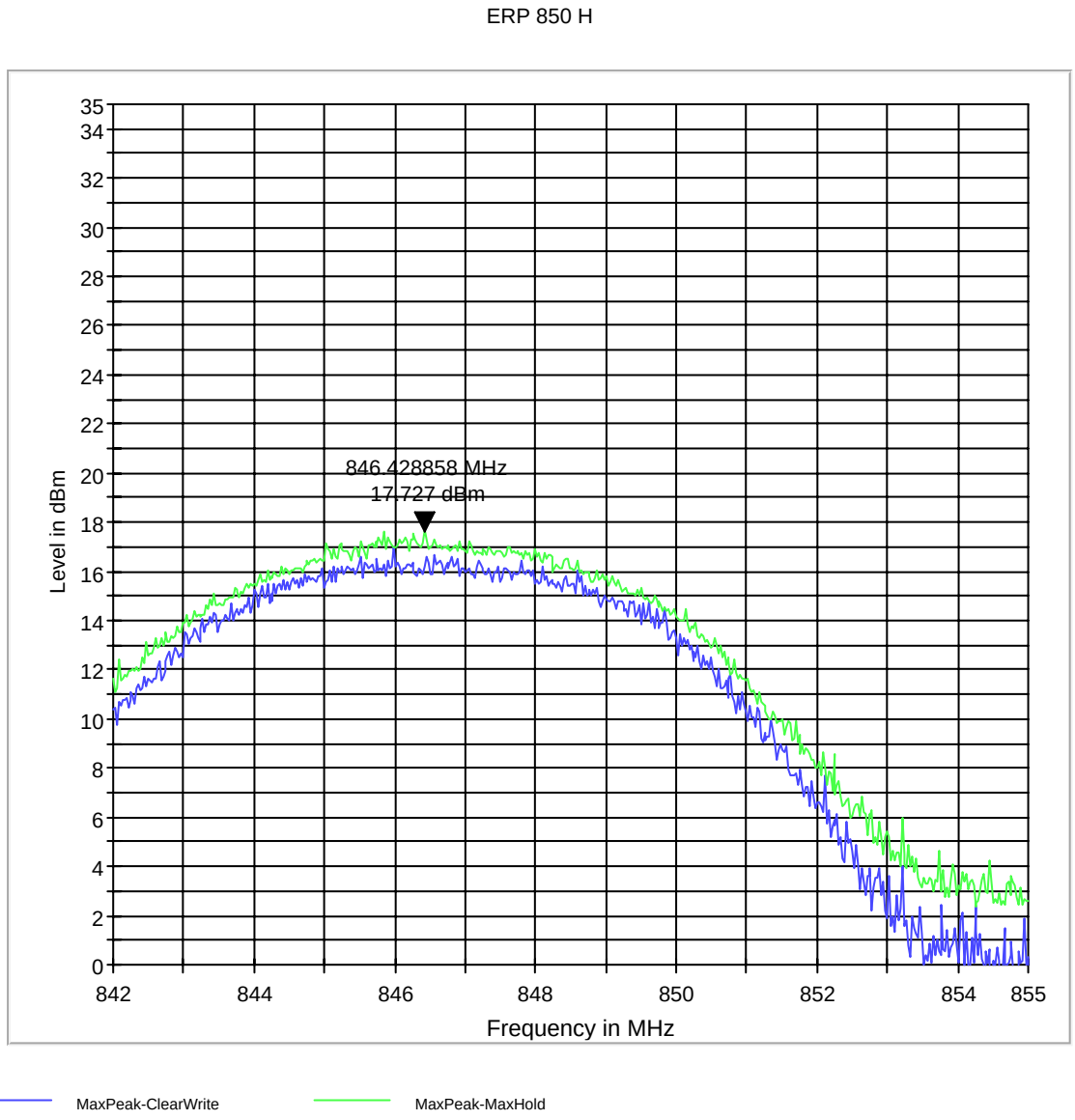
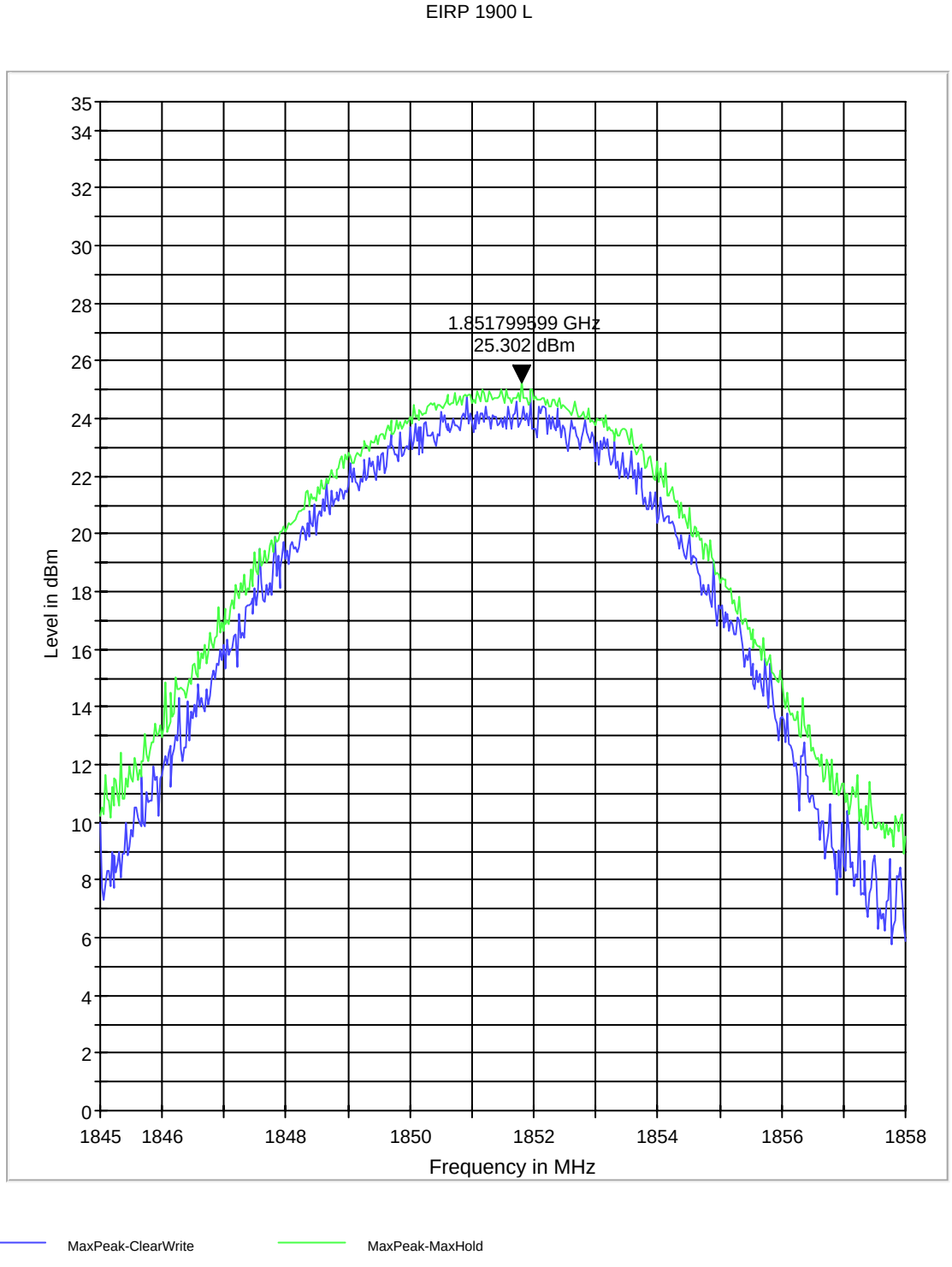
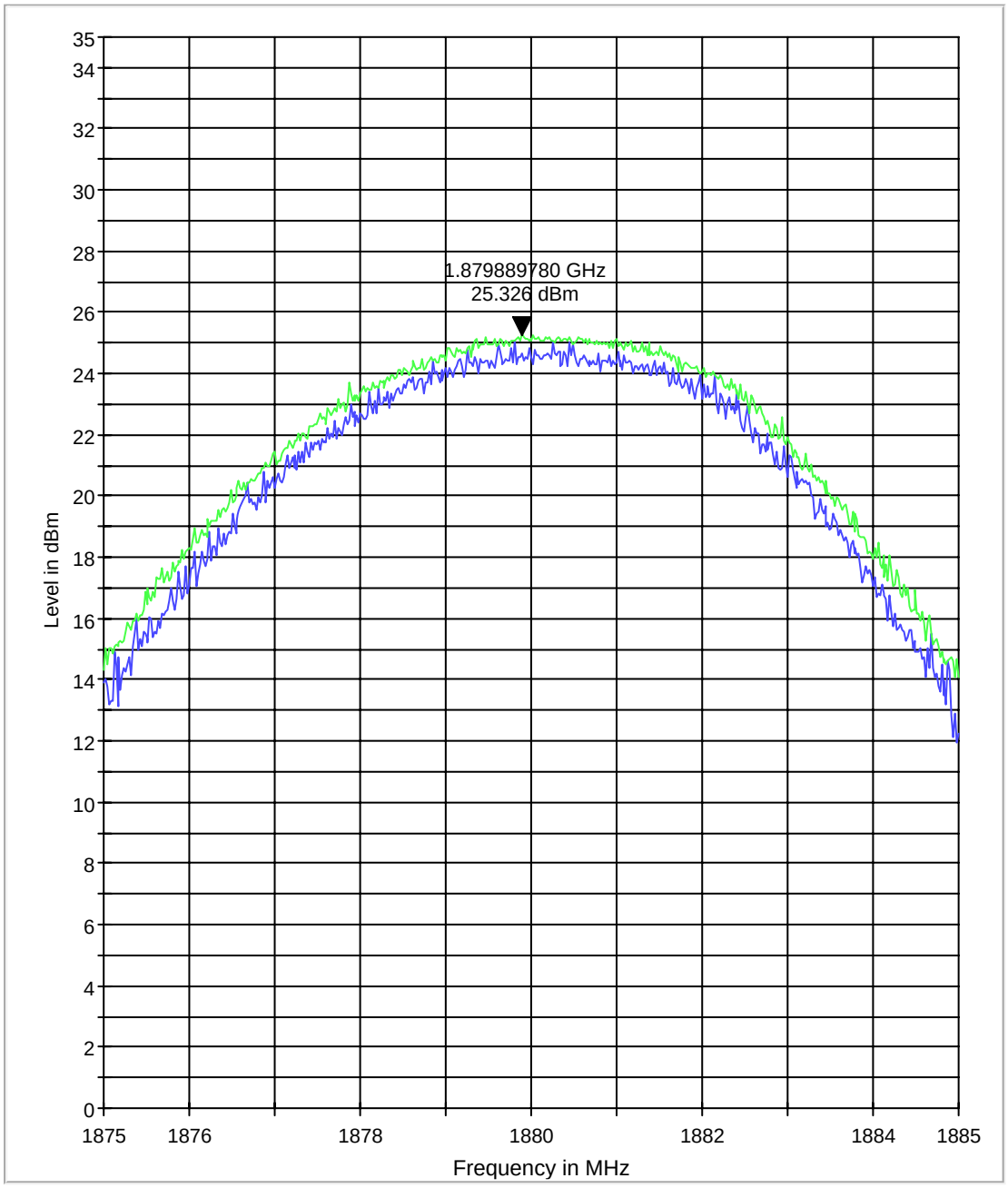


EIRP (CDMA 1900) CHANNEL L §24.232(b)



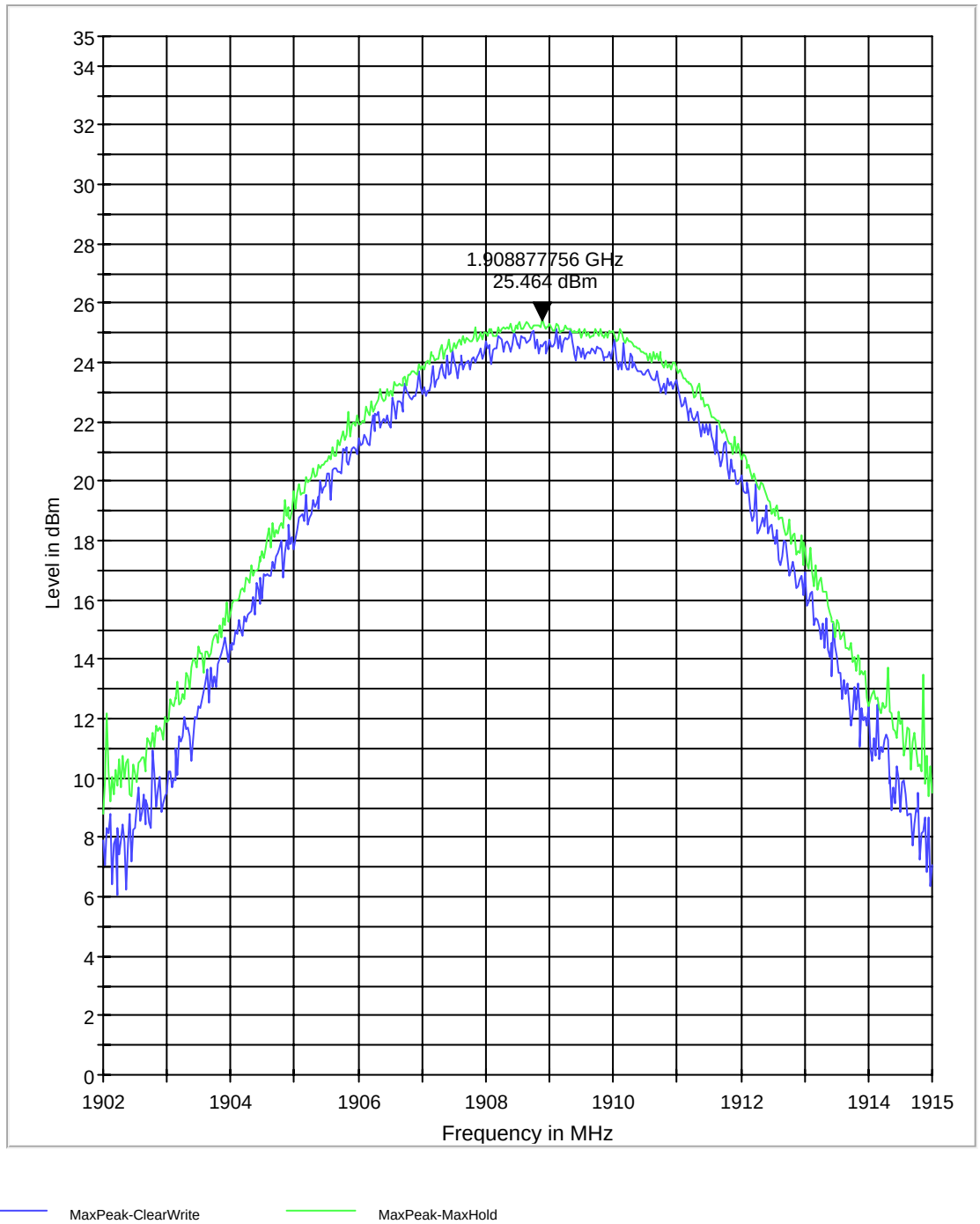
EIRP (CDMA 1900) CHANNEL M §24.232(b)

EIRP 1900 M



EIRP (CDMA 1900) CHANNEL H §24.232(b)

EIRP 1900 H



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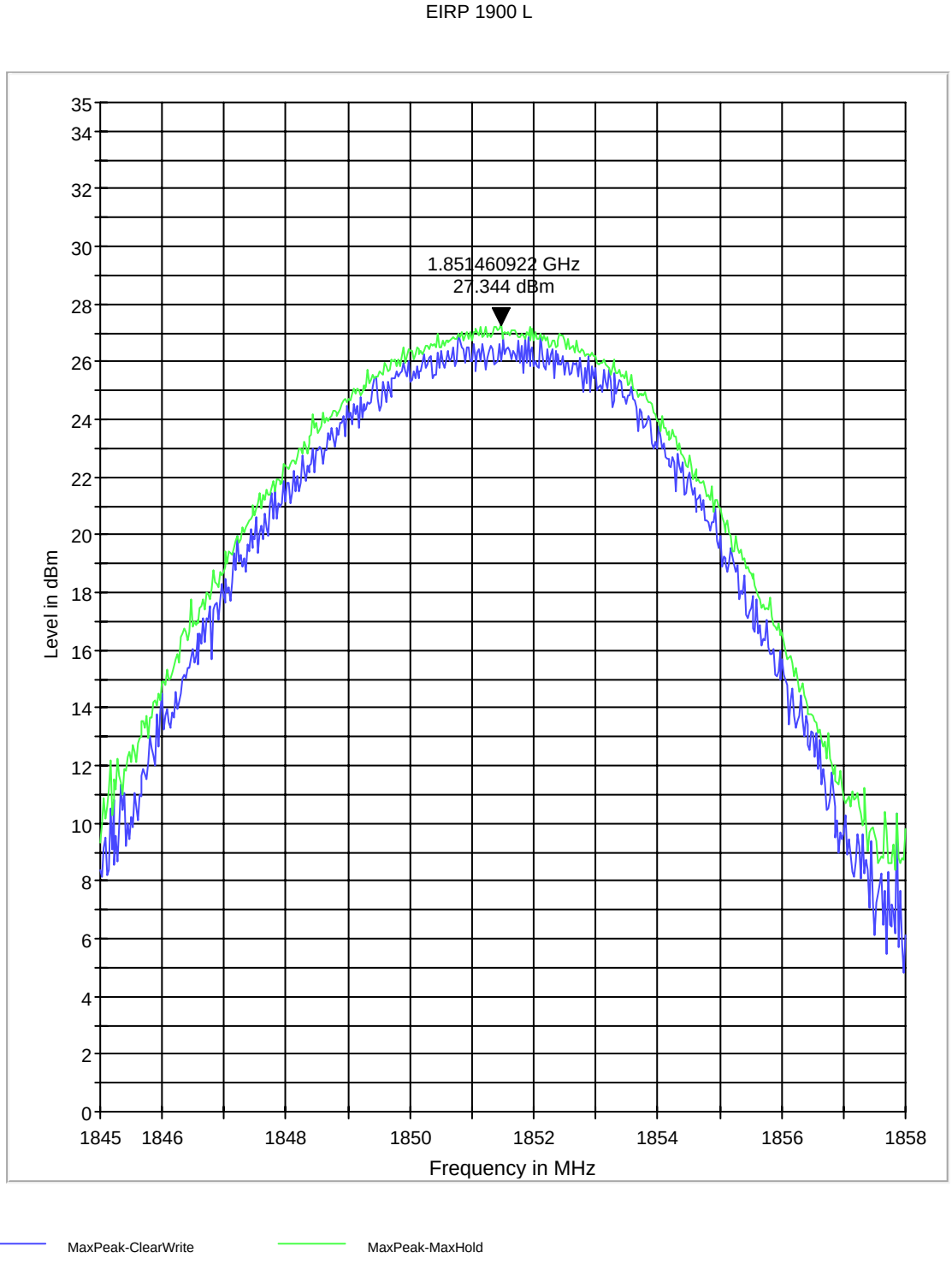
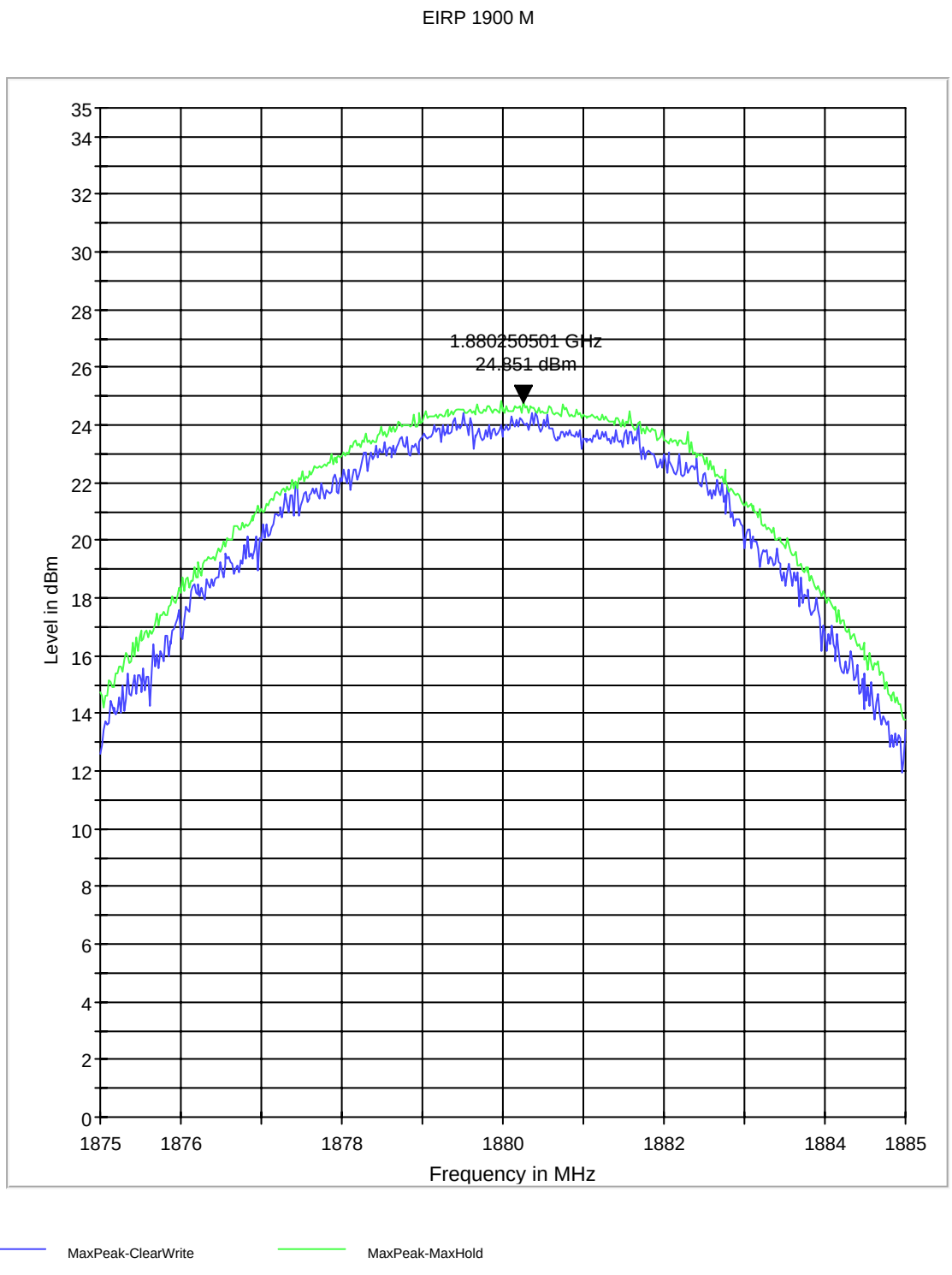
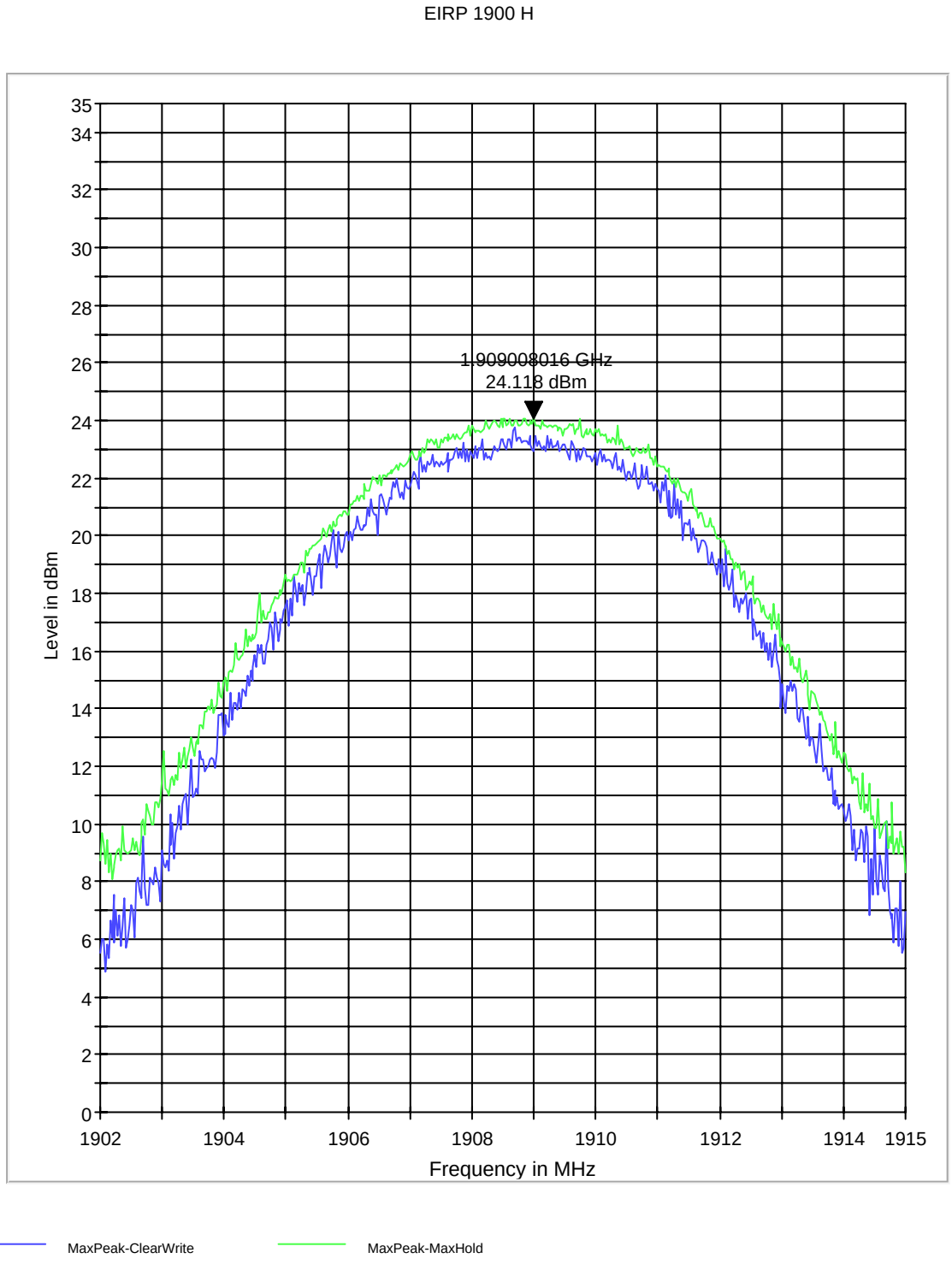


EIRP (EVDO 1900) CHANNEL M §24.232(b)

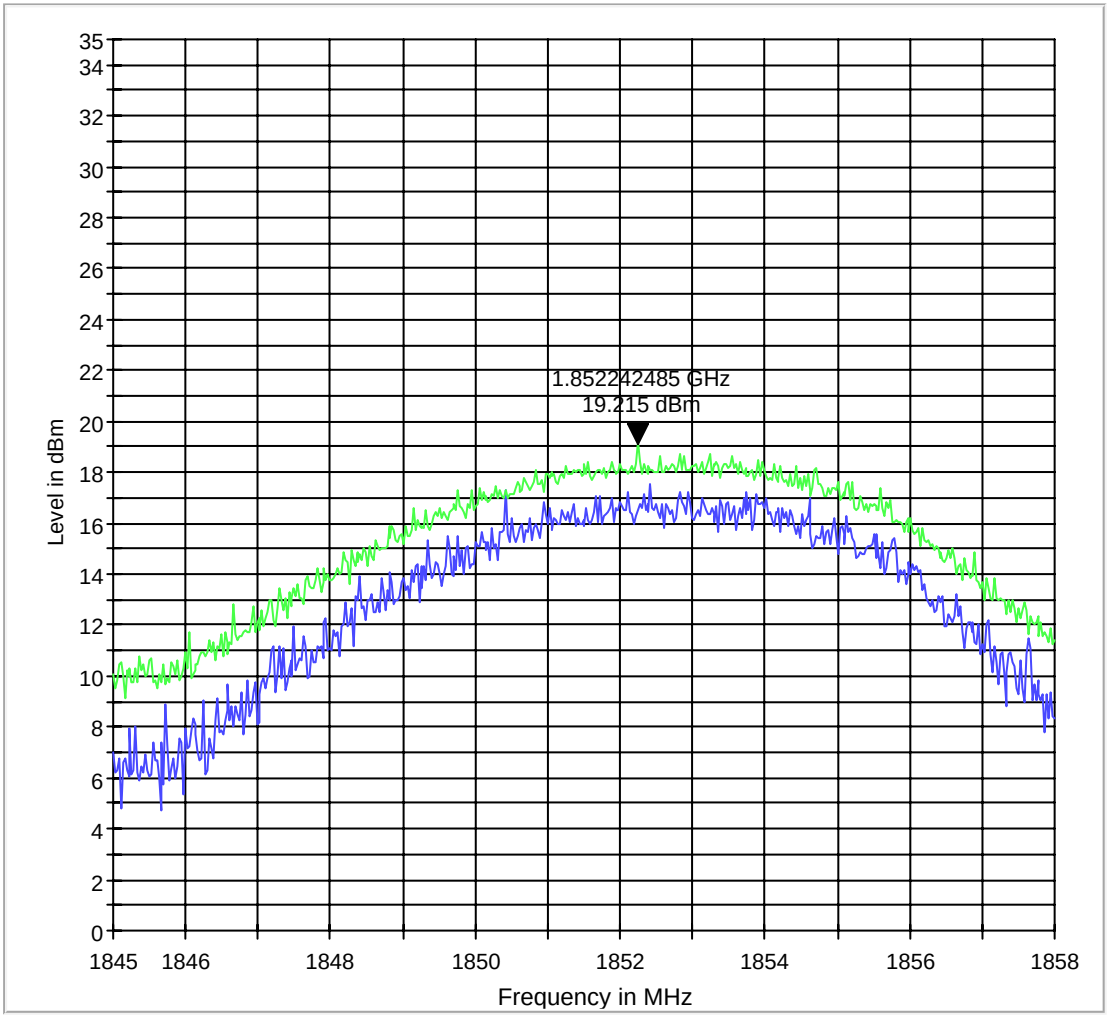


EIRP (EVDO 1900) CHANNEL H §24.232(b)



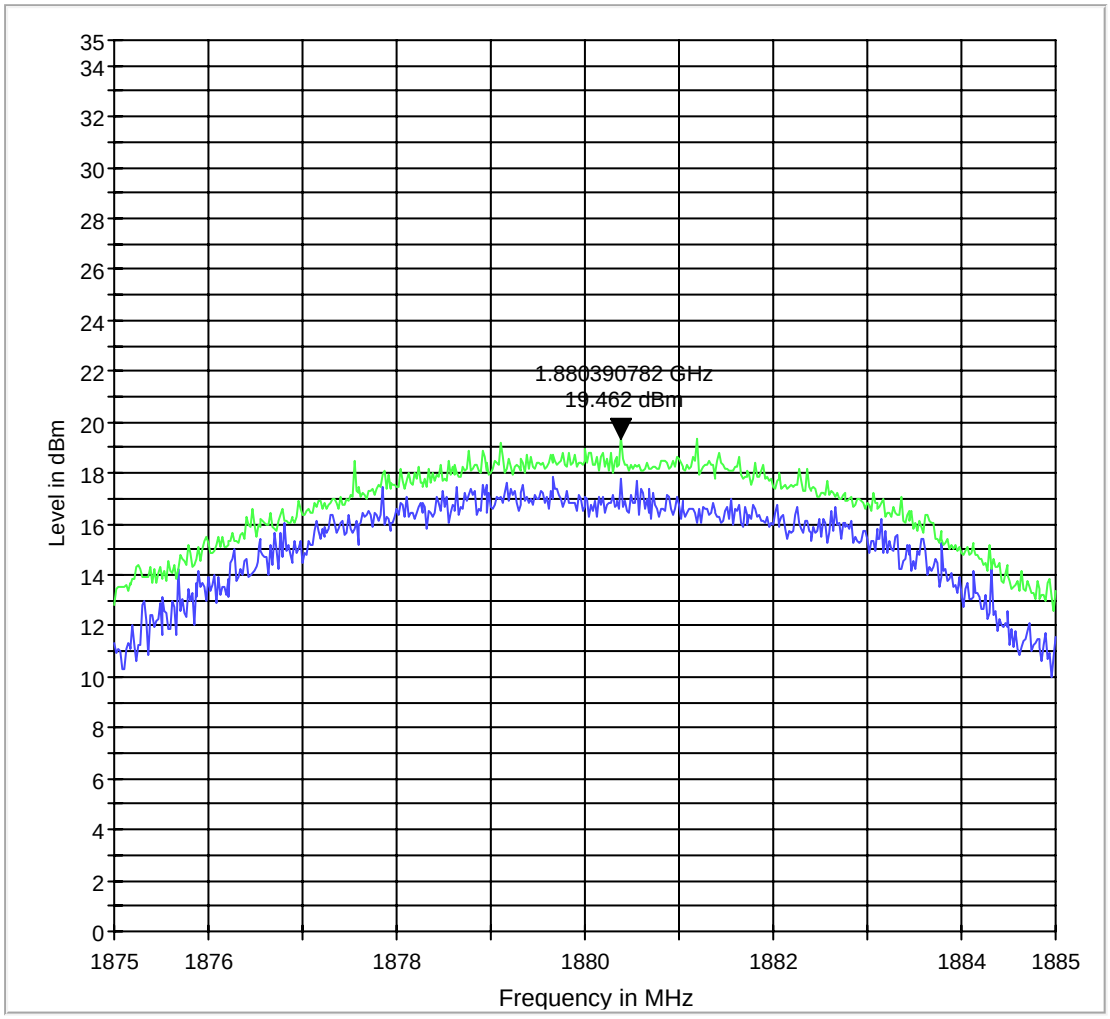
EIRP (UMTS FDD2) CHANNEL 9262 §24.232(b)

EIRP 1900 L



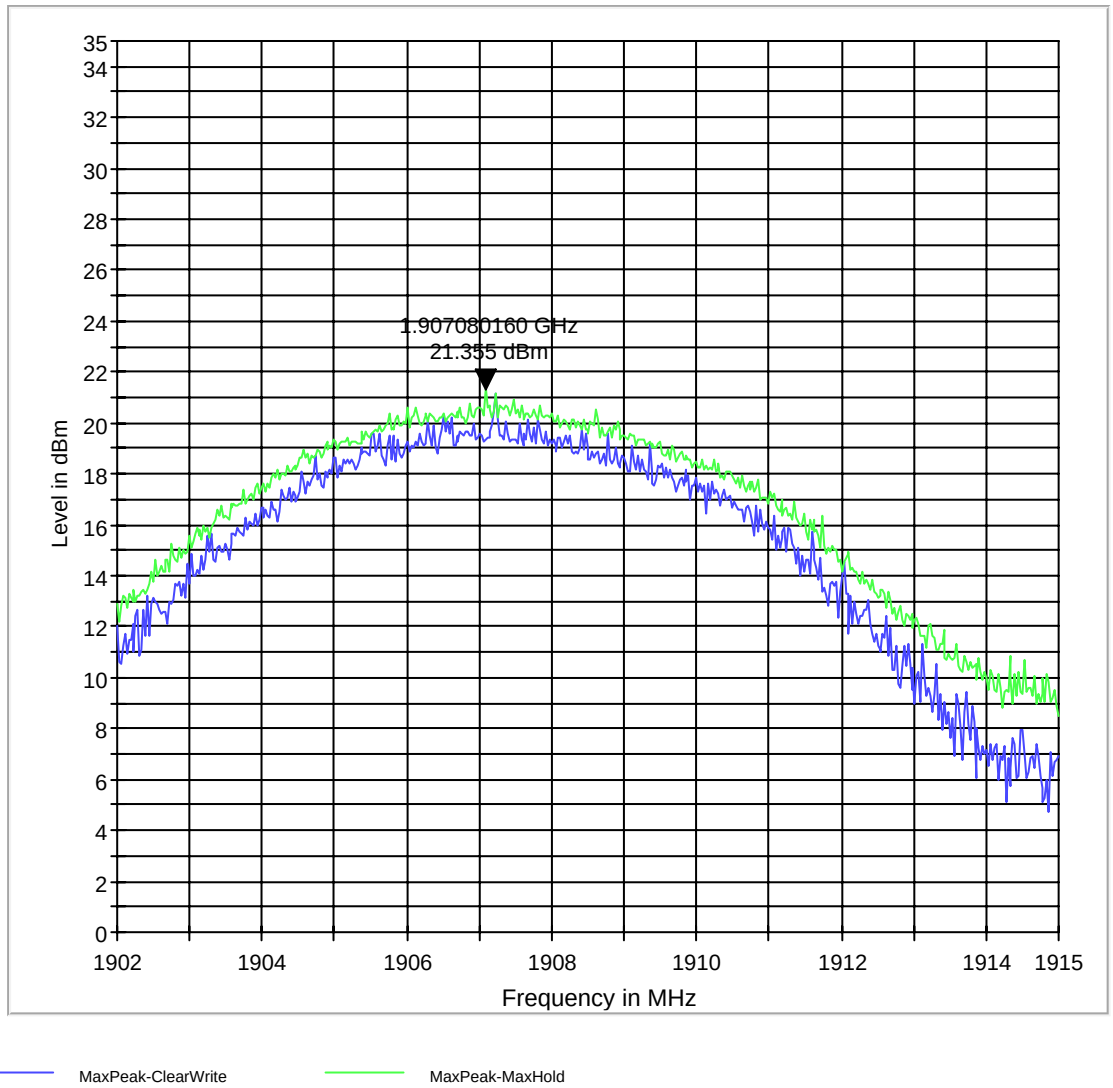
EIRP (UMTS FDD2) CHANNEL 9400 §24.232(b)

EIRP 1900 M



EIRP (UMTS FDD2) CHANNEL 9538 §24.232(b)

EIRP 1900 H



4.2 Spurious Emissions Radiated

4.2.1 FCC 2.1053 Measurements required: Field strength of spurious radiation.

(a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission.

4.2.2 Limits:

4.2.2.1 FCC 22.917 Emission limitations for cellular equipment.

The rules in this section govern the spectral characteristics of emissions in the Cellular Radiotelephone Service.

(a) *Out of band emissions*. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

(b) *Measurement procedure.* Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

4.2.2.2 FCC 24.238 Emission limitations for Broadband PCS equipment.

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.

(a) *Out of band emissions*. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

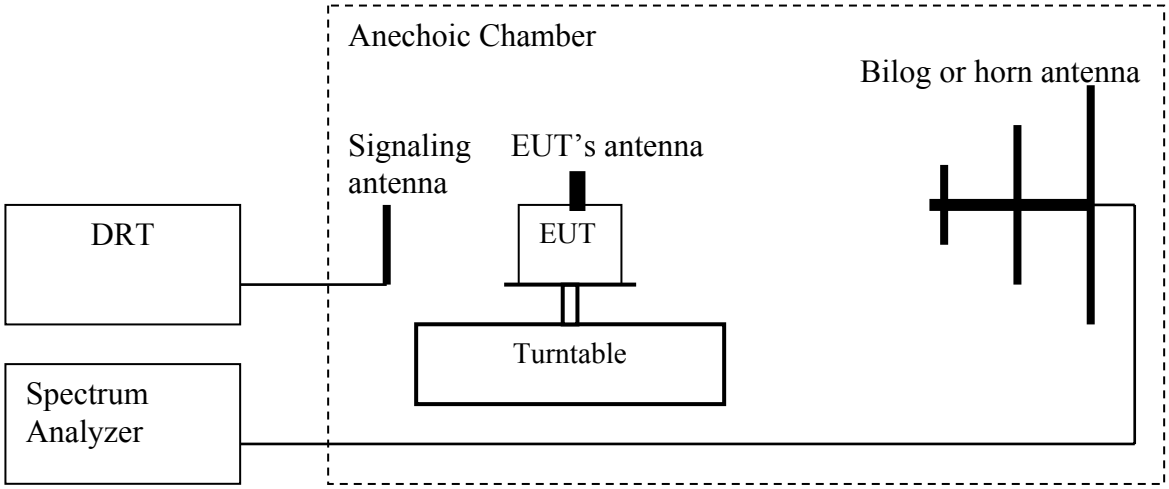
(b) Measurement procedure. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required

measurement bandwidth (*i.e.* 100 kHz of 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

4.2.3 Radiated out of band measurement procedure:

Based on TIA-603C 2004

2.2.12 Unwanted emissions: Radiated Spurious



1. Connect the equipment as shown in the above diagram with the EUT's antenna in a horizontal orientation.
2. Adjust the settings of the Digital Radiocommunication Tester (DRT) to set the EUT to its maximum power at the required channel.
3. Set the spectrum analyzer to measure peak hold with the required settings.
4. Place the measurement antenna in a horizontal orientation. Rotate the EUT 360°. Raise the measurement antenna up to 4 meters in 0.5 meters increments and rotate the EUT 360° at each height to maximize all emissions. Measure and record all spurious emissions (**LVL**) up to the tenth harmonic of the carrier frequency.
5. Replace the EUT with a horizontally polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.
6. Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS)**. **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).
7. Determine the level of spurious emissions using the following equation: **Spurious** (dBm) = **LVL** (dBm) + **LOSS** (dB):
8. Repeat steps 4, 5 and 6 with all antennas vertically polarized.
9. Determine the level of spurious emissions using the following equation: **Spurious** (dBm) = **LVL** (dBm) + **LOSS** (dB):

10. Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

(**note:** Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4 and 7 above are performed with test software.)

Spectrum analyzer settings:
Res B/W: 1 MHz
Vid B/W: 1 MHz

Measurement Survey:

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the Cellular-850 & PCS-1900 bands. It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the Cellular-850 & PCS-1900 band into any of the other blocks respectively. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

4.2.4 Radiated out of band emissions results on EUT:

4.2.4.1 Test Results Transmitter Spurious Emission CDMA850:

Harmonics	Tx ch-128 Freq. (MHz)	Level (dBm)	Tx ch-190 Freq. (MHz)	Level (dBm)	Tx ch-251 Freq. (MHz)	Level (dBm)
2	**1648.4**	NF	**1673.2**	NF	**1697.6**	NF
3	**2472.6**	NF	**2509.8**	NF	**2546.4**	NF
4	**3296.8**	NF	**3346.4**	NF	**3395.2**	NF
5	**4121**	NF	**4183**	NF	**4244**	NF
6	**4945.2**	NF	**5019.6**	NF	**5092.8**	NF
7	**5769.4**	NF	**5856.2**	NF	**5941.6**	NF
8	**6593.6**	NF	**6692.8**	NF	**6790.4**	NF
9	**7417.8**	NF	**7529.4**	NF	**7639.2**	NF
10	**8242**	NF	**8366**	NF	**8488**	NF
NF = NOISE FLOOR						

RADIATED SPURIOUS EMISSIONS (CDMA-850) TX: 30MHz - 1GHz

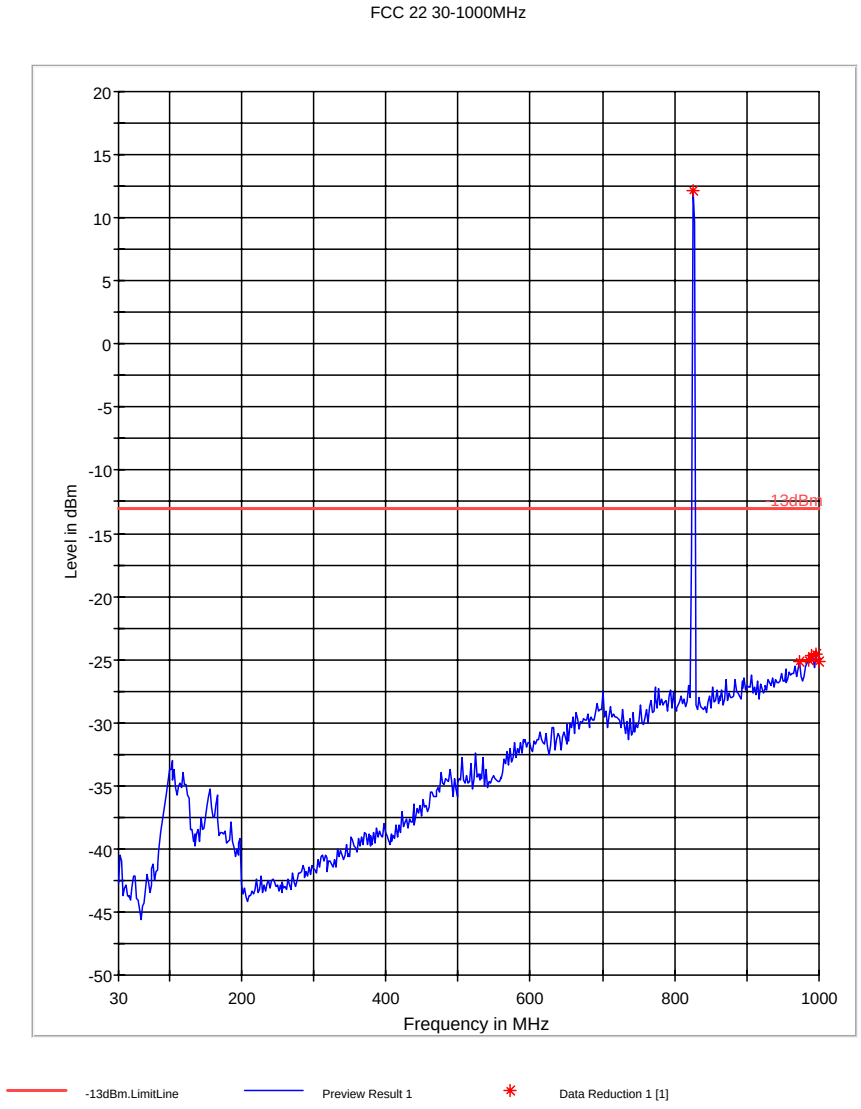
Spurious emission limit –13dBm

USED RBW=100 kHz VBW=100 kHz

Note:

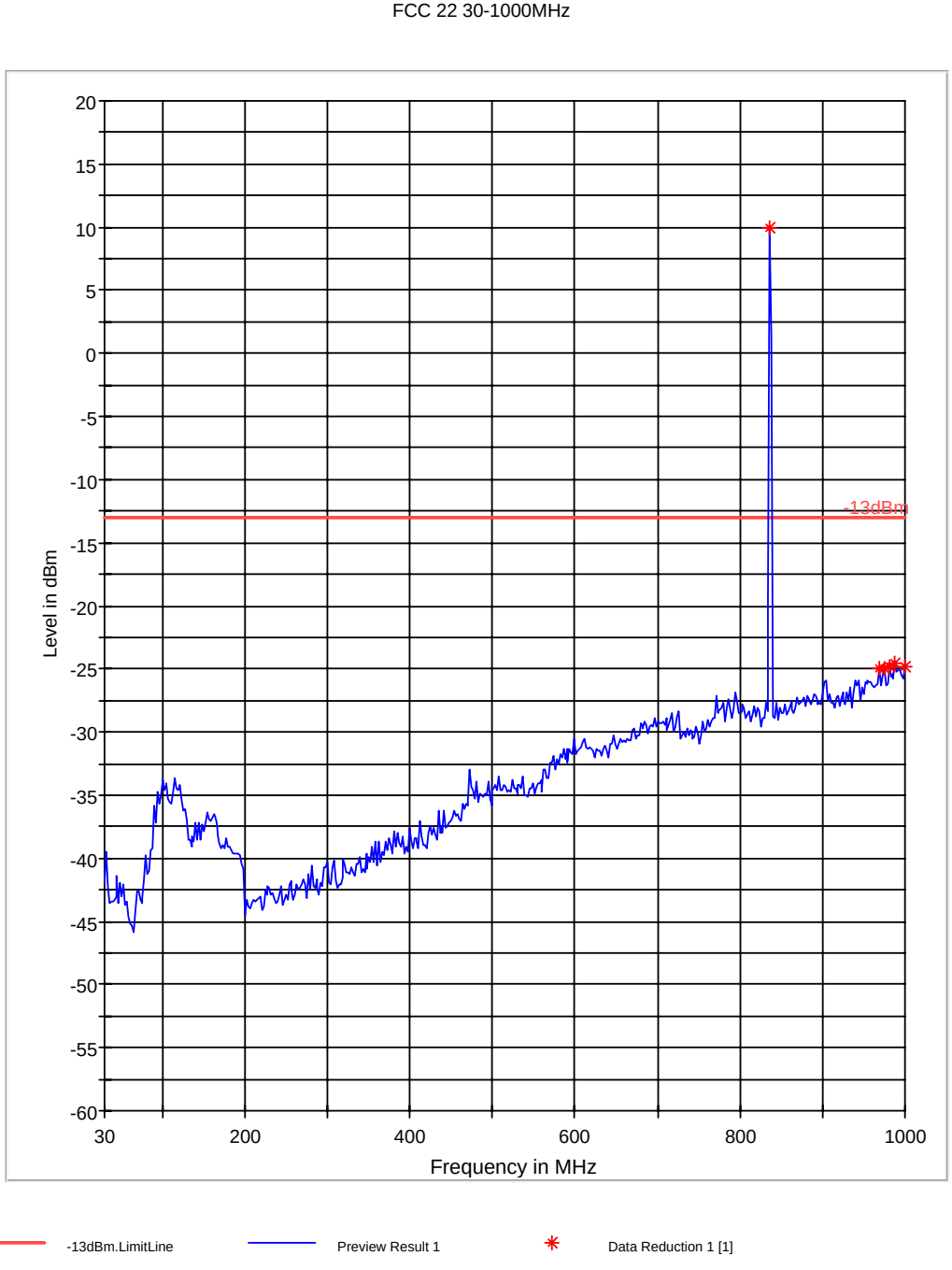
1. This plot contains results of antenna in both horizontal and vertical polarizations

FCC 22 30-1000MHz Low Channel



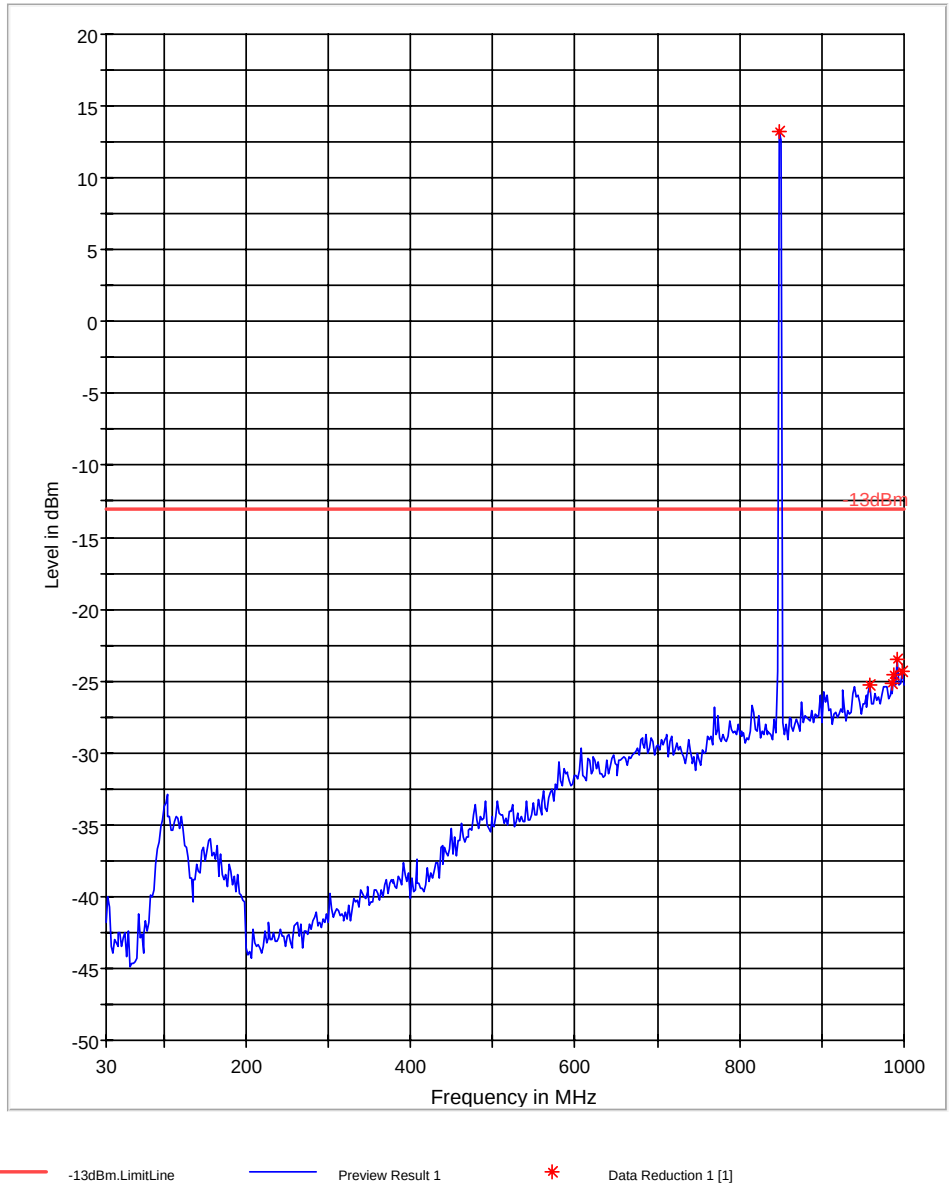
USED RBW=100 kHz VBW=100 kHz
Note: This plot contains results of antenna in both horizontal and vertical polarizations.

FCC 22 30-1000MHz Mid Channel



Note: This plot contains results of antenna in both horizontal and vertical polarizations
Note: Marker placed on transmit signal

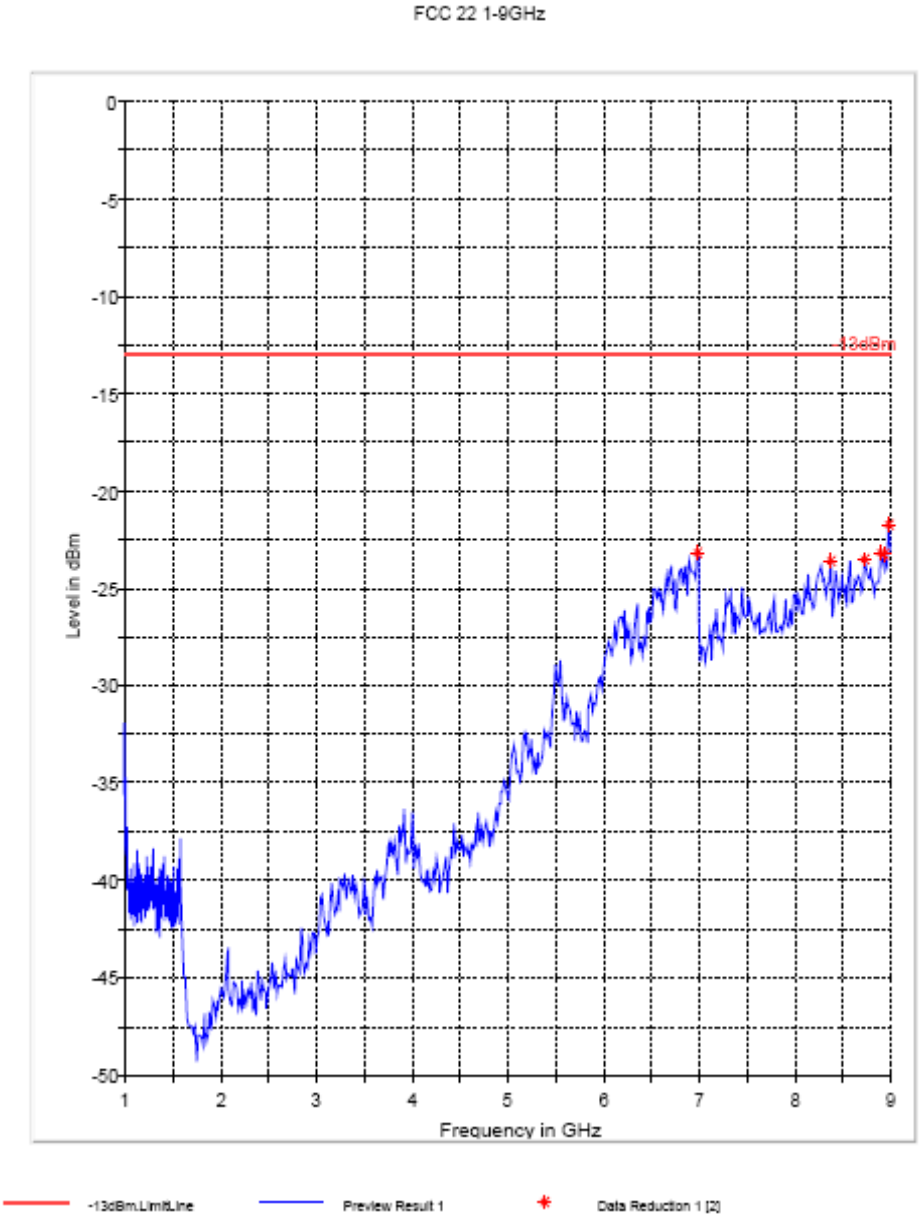
FCC 22 30-1000MHz High Channel



RADIATED SPURIOUS EMISSIONS (CDMA-850): 1GHz – 9GHz

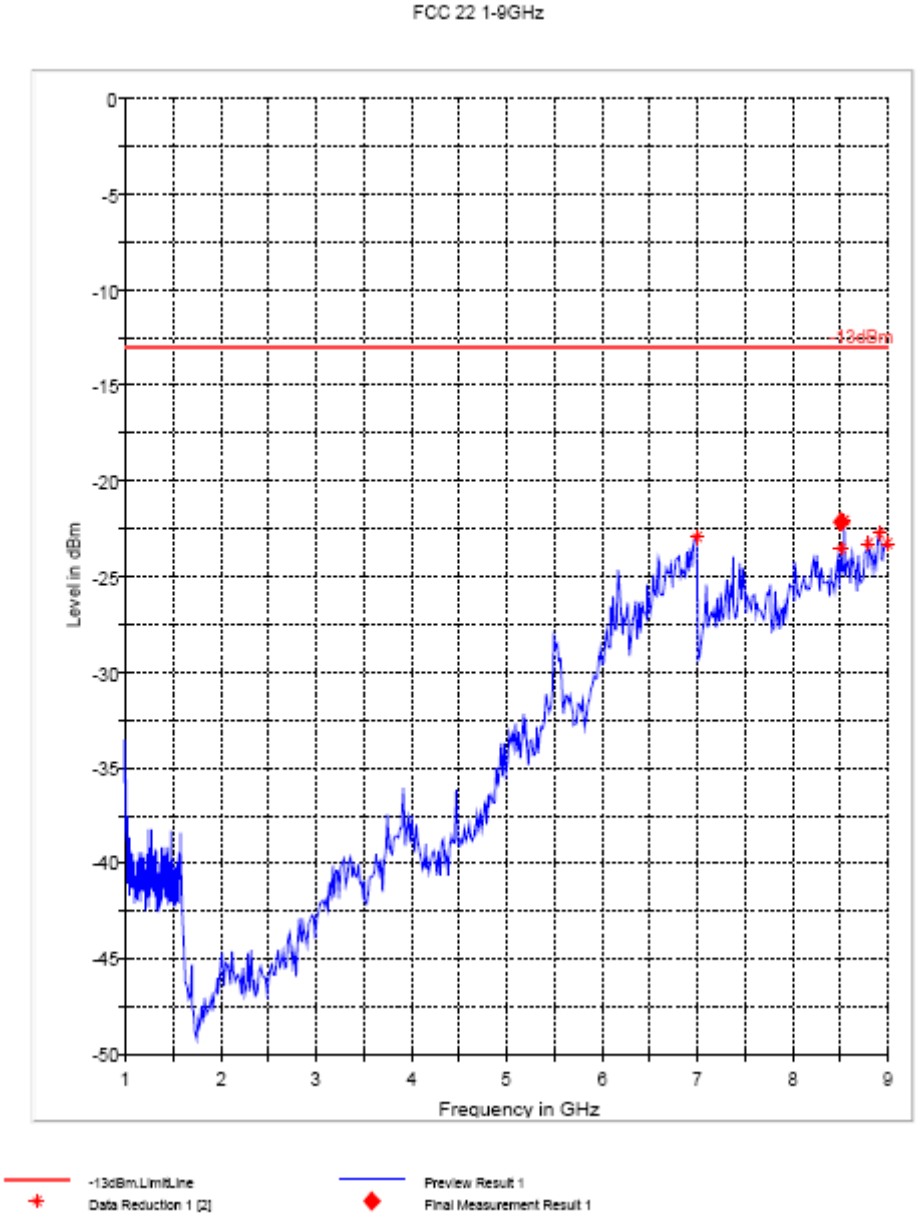
USED RBW=1 MHz VBW=1 MHz
This plot contains results of antenna in both horizontal and vertical polarizations

FCC 22 1-9GHz Low Channel



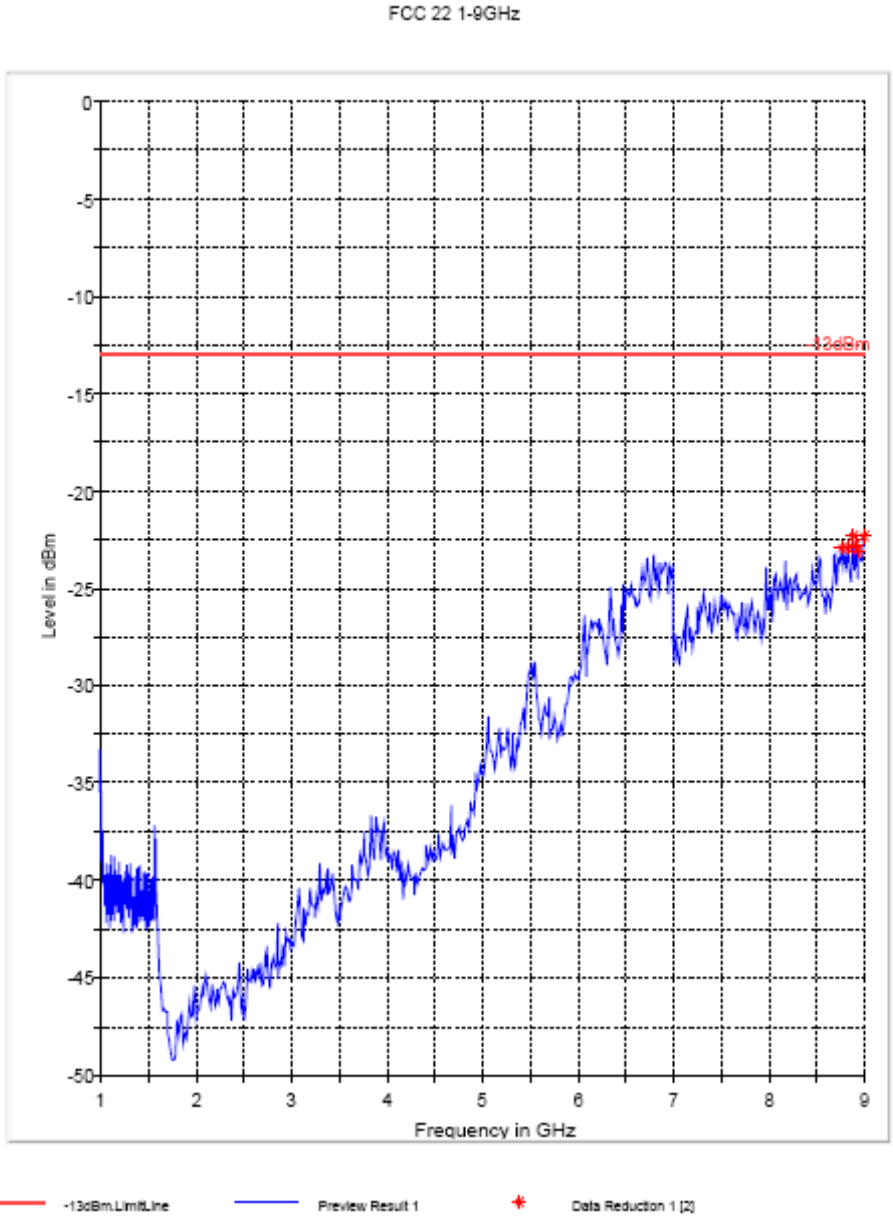
USED RBW=1 MHz VBW=1 MHz
Note: This plot contains results of antenna in both horizontal and vertical polarizations

FCC 22 1-9GHz Mid Channel



USED RBW=1 MHz VBW=1 MHz
Note: This plot contains results of antenna in both horizontal and vertical polarizations

FCC 22 1-9GHz High Channel



4.2.4.2 Test Results Transmitter Spurious Emission UMTS FDD5

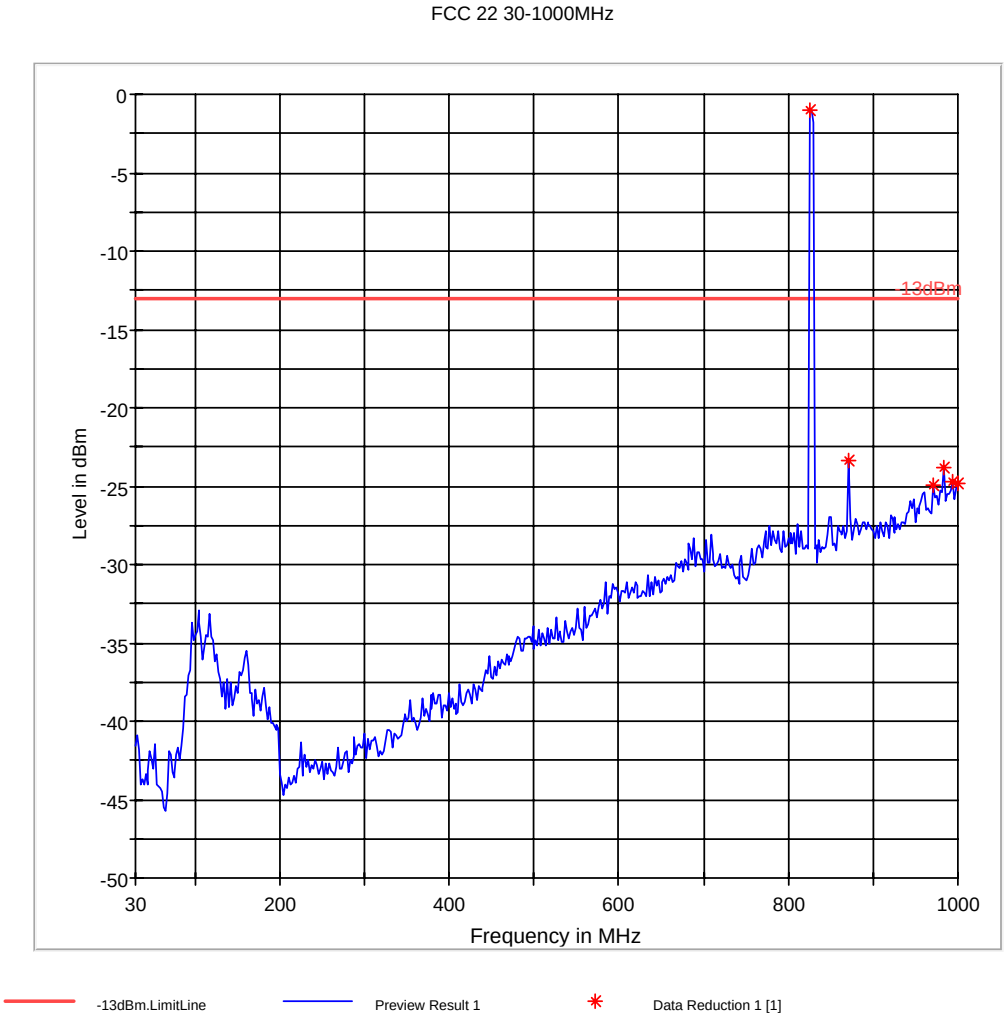
Harmonics	Tx ch-4132 Freq. (MHz)	Level(dBm)	Tx ch-4183 Freq. (MHz)	Level(dBm)	Tx ch-4233 Freq. (MHz)	Level(dBm)
2	**1652.8**	NF	**1673.2**	NF	**1693.2**	NF
3	**2479.2**	NF	**2509.8**	NF	**2539.8**	NF
4	**3305.6**	NF	**3346.4**	NF	**3386.4**	NF
5	**4132**	NF	**4183**	NF	**4233**	NF
6	**4958.4**	NF	**5019.6**	NF	**5079.6**	NF
7	**5784.8**	NF	**5856.2**	NF	**5926.2**	NF
8	**6611.2**	NF	**6692.8**	NF	**6772.8**	NF
9	**7437.6**	NF	**7529.4**	NF	**7619.4**	NF
10	**8264**	NF	**8366**	NF	**8466**	NF

RADIATED SPURIOUS EMISSIONS (UMTS FDD5) TX: 30MHz - 1GHz

Spurious emission limit –13dBm

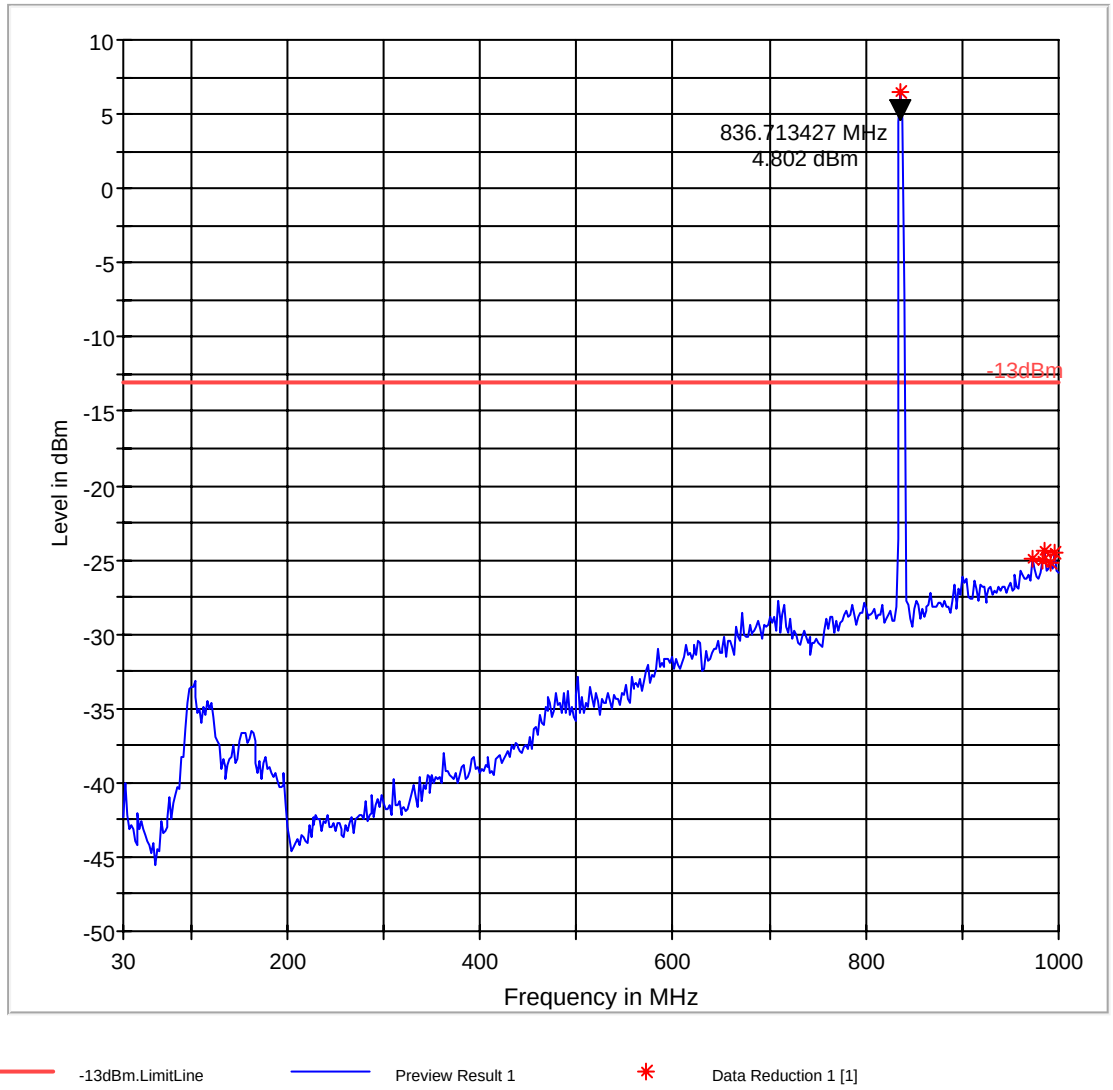
```
Note:
   1. The peak above the limit line is the carrier freq.
   2. This plot contains results of antenna in both horizontal and vertical
   polarizations
```

FCC 22 30-1000MHz Low Channel



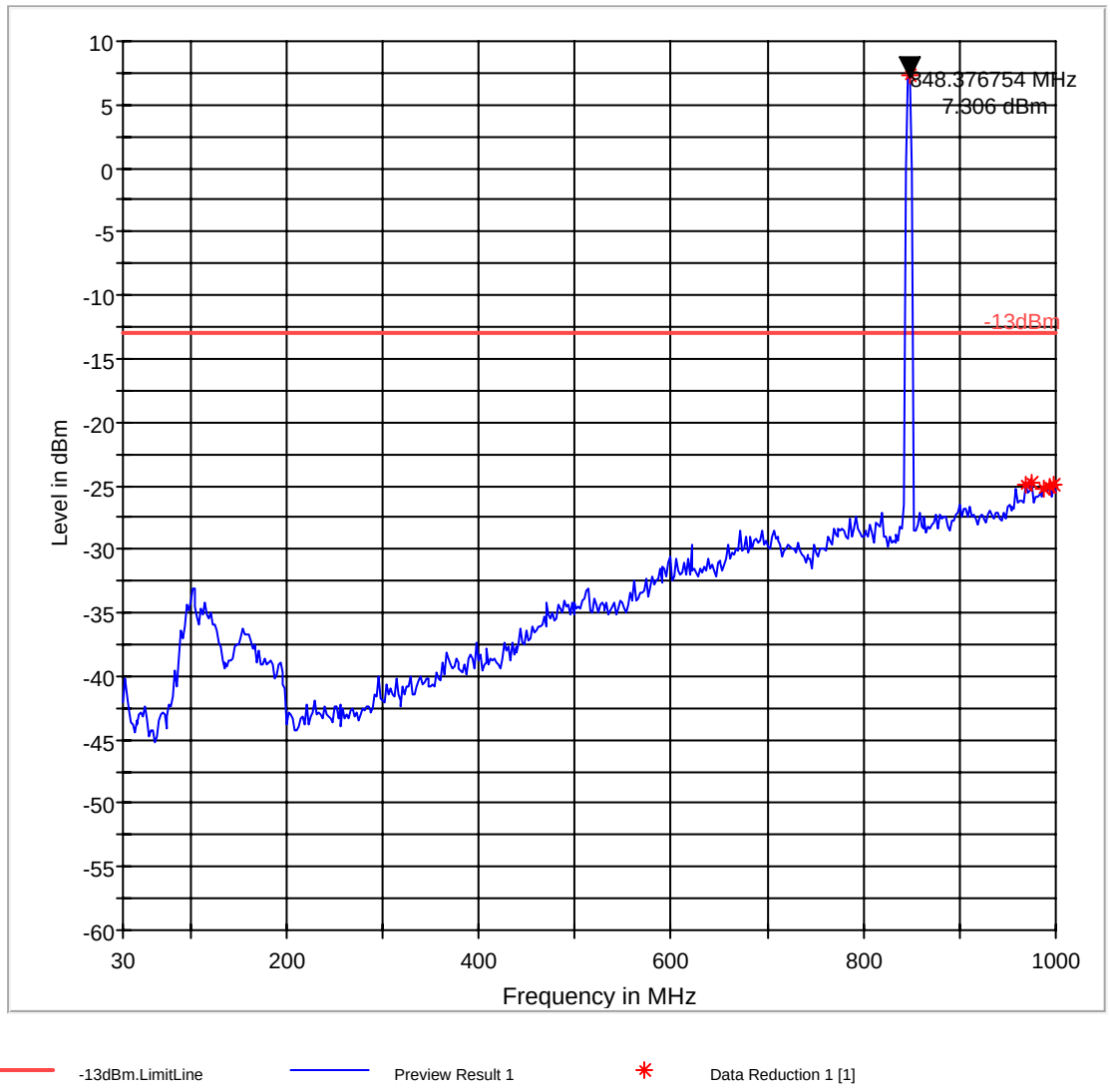
Note: This plot contains results of antenna in both horizontal and vertical polarizations
Note: Marker placed on transmit signal

FCC 22 30-1000MHz Mid Channel



Note: This plot contains results of antenna in both horizontal and vertical polarizations
Note: Emission over the limit is transmit signal

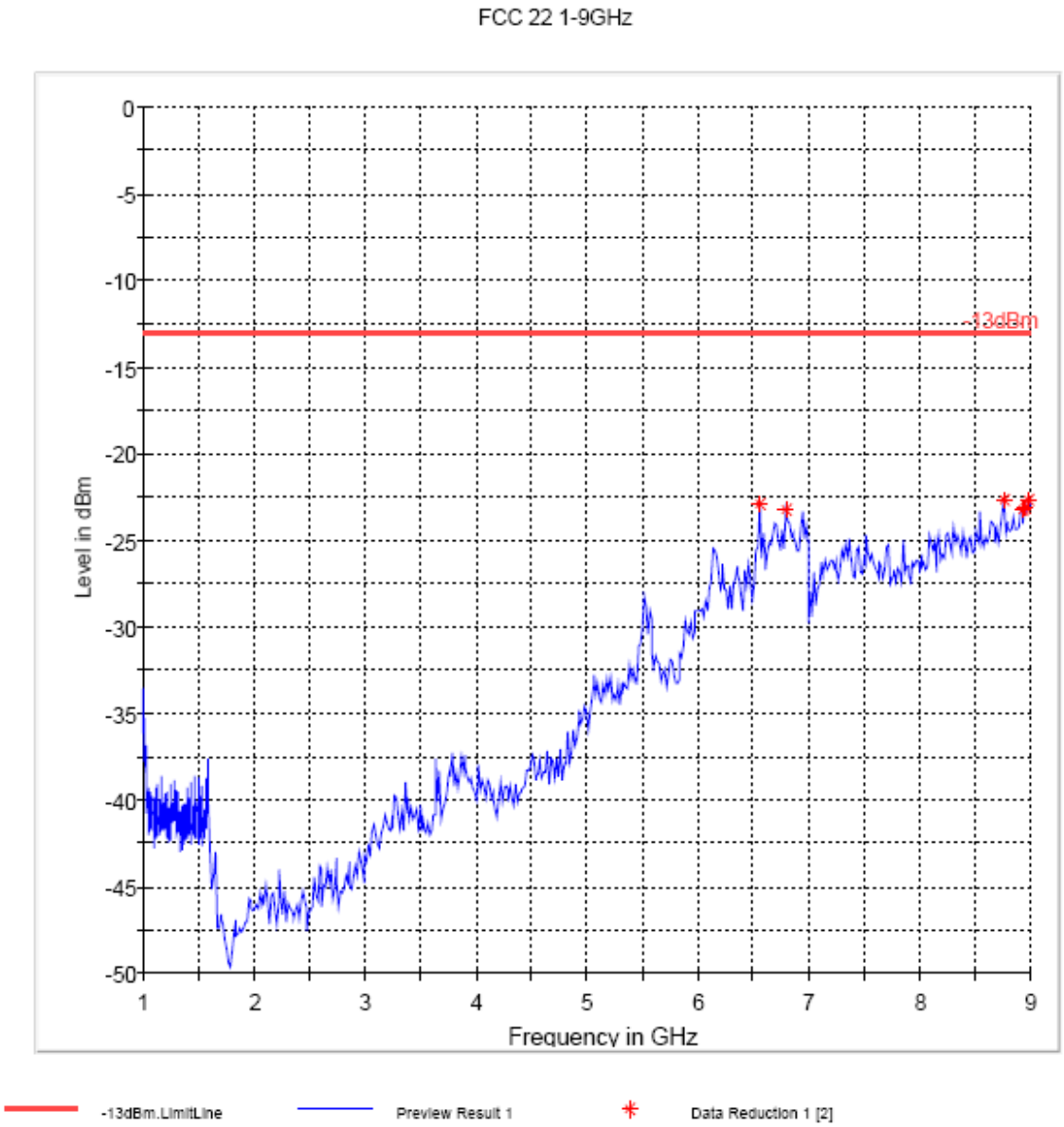
FCC 22 30-1000MHz High Channel



RADIATED SPURIOUS EMISSIONS (UMTS FDD5) Tx CHANNEL 4132: 1GHz - 9GHz

USED RBW=1 MHz VBW=1 MHz
Note: This plot contains results of antenna in both horizontal and vertical polarizations

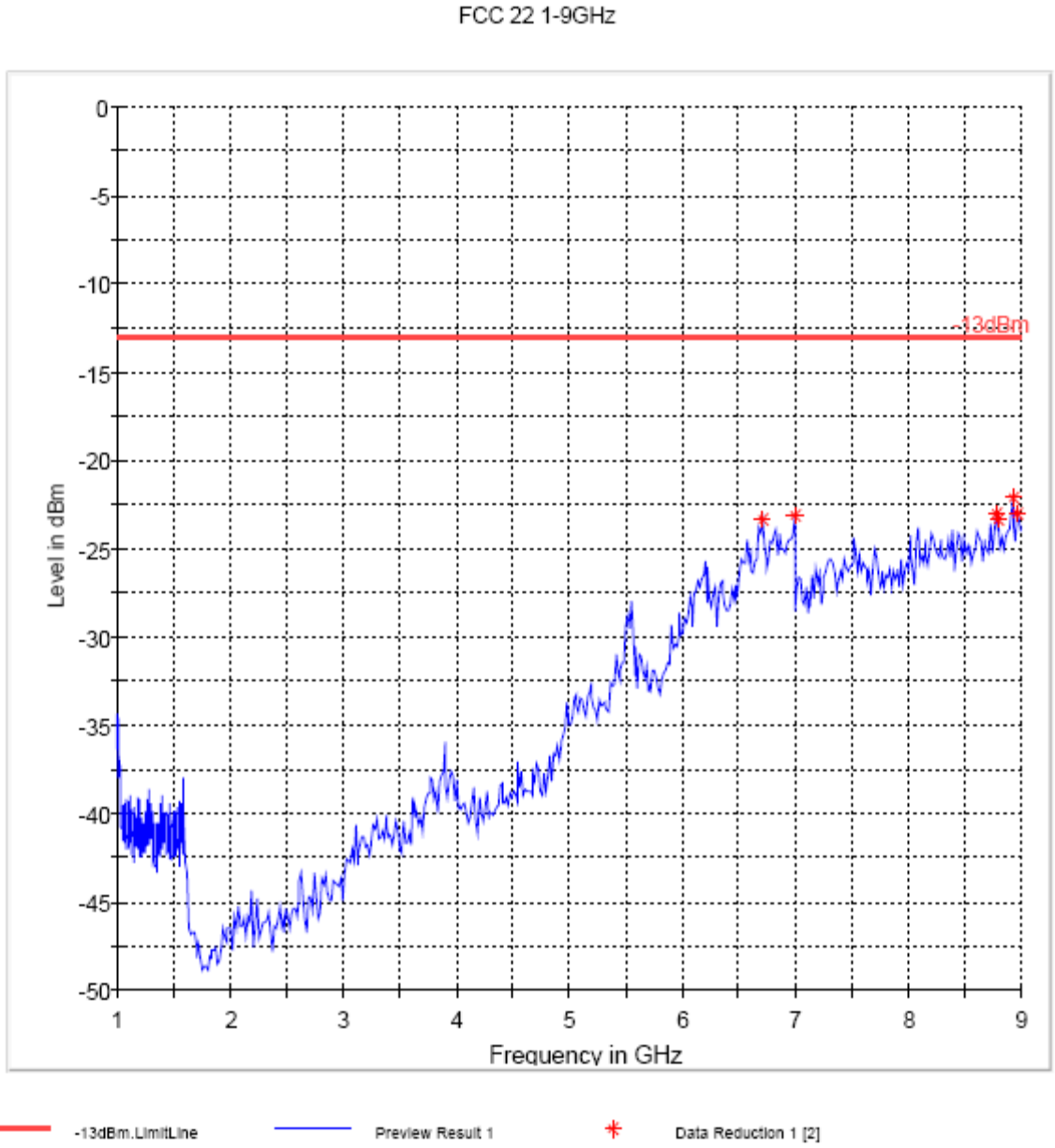
FCC 22 1-9GHz Low Channel



RADIATED SPURIOUS EMISSIONS (UMTS FDD5) Tx CHANNEL 4183: 1GHz - 9GHz

USED RBW=1 MHz VBW=1 MHz
Note: This plot contains results of antenna in both horizontal and vertical polarizations

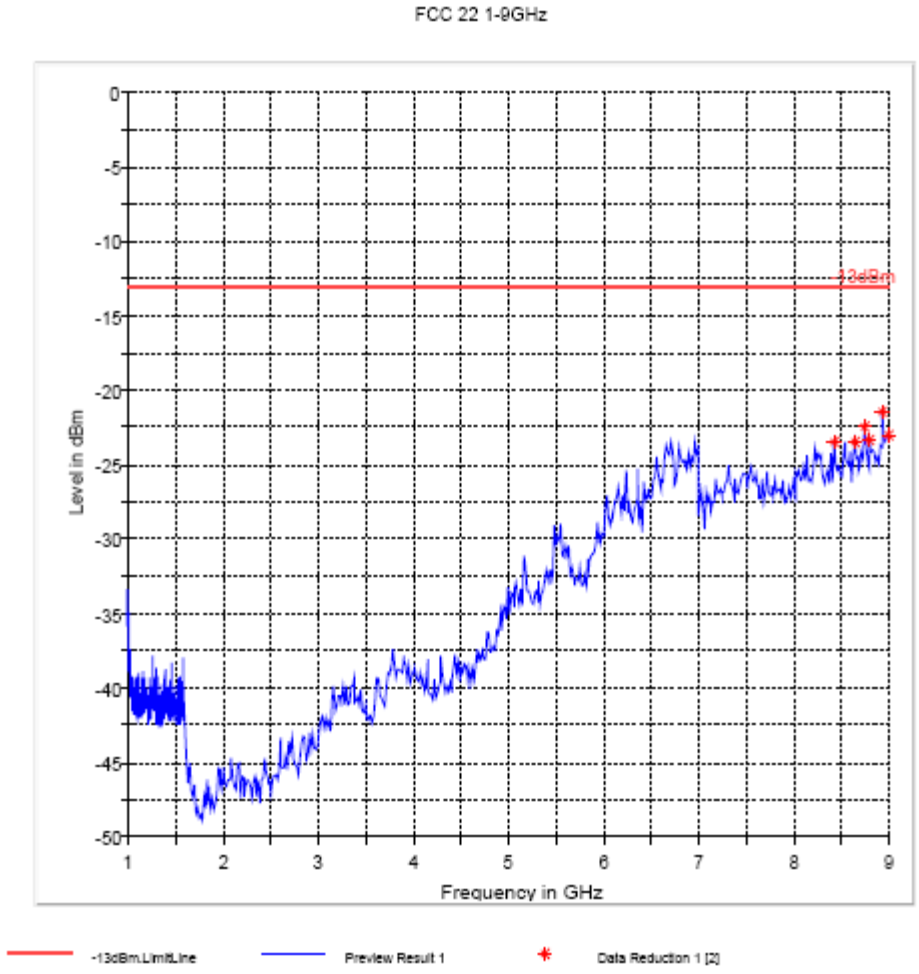
FCC 22 1-9GHz Mid Channel



RADIATED SPURIOUS EMISSIONS (UMTS FDD5) Tx CHANNEL 4233: 1GHz – 9GHz

USED RBW=1 MHz VBW=1 MHz
Note: This plot contains results of antenna in both horizontal and vertical polarizations

FCC 22 1-9GHz High Channel



4.2.4.3 Test Results Transmitter Spurious Emission CDMA-1900:

Harmonic	Tx ch-512 Freq.(MHz)	Level (dBm)	Tx ch-661 Freq. (MHz)	Level (dBm)	Tx ch-810 Freq. (MHz)	Level (dBm)
2	**3700.4**	NF	**3760**	NF	**3819.6**	NF
3	**5550.6**	NF	**5640**	NF	**5729.4**	NF
4	**7400.8**	NF	**7520**	NF	**7639.2**	NF
5	**9251**	NF	**9400**	NF	**9549**	NF
6	**11101.2**	NF	**11280**	NF	**11458.8**	NF
7	**12951.4**	NF	**13160**	NF	**13368.6**	NF
8	**14801.6**	NF	**15040**	NF	**15278.4**	NF
9	**16651.8**	NF	**16920**	NF	**17188.2**	NF
10	**18502**	NF	**18800**	NF	**19098**	NF
NF = NOISE FLOOR						

RADIATED SPURIOUS EMISSIONS (CDMA 1900) TX: 30MHz - 1GHz

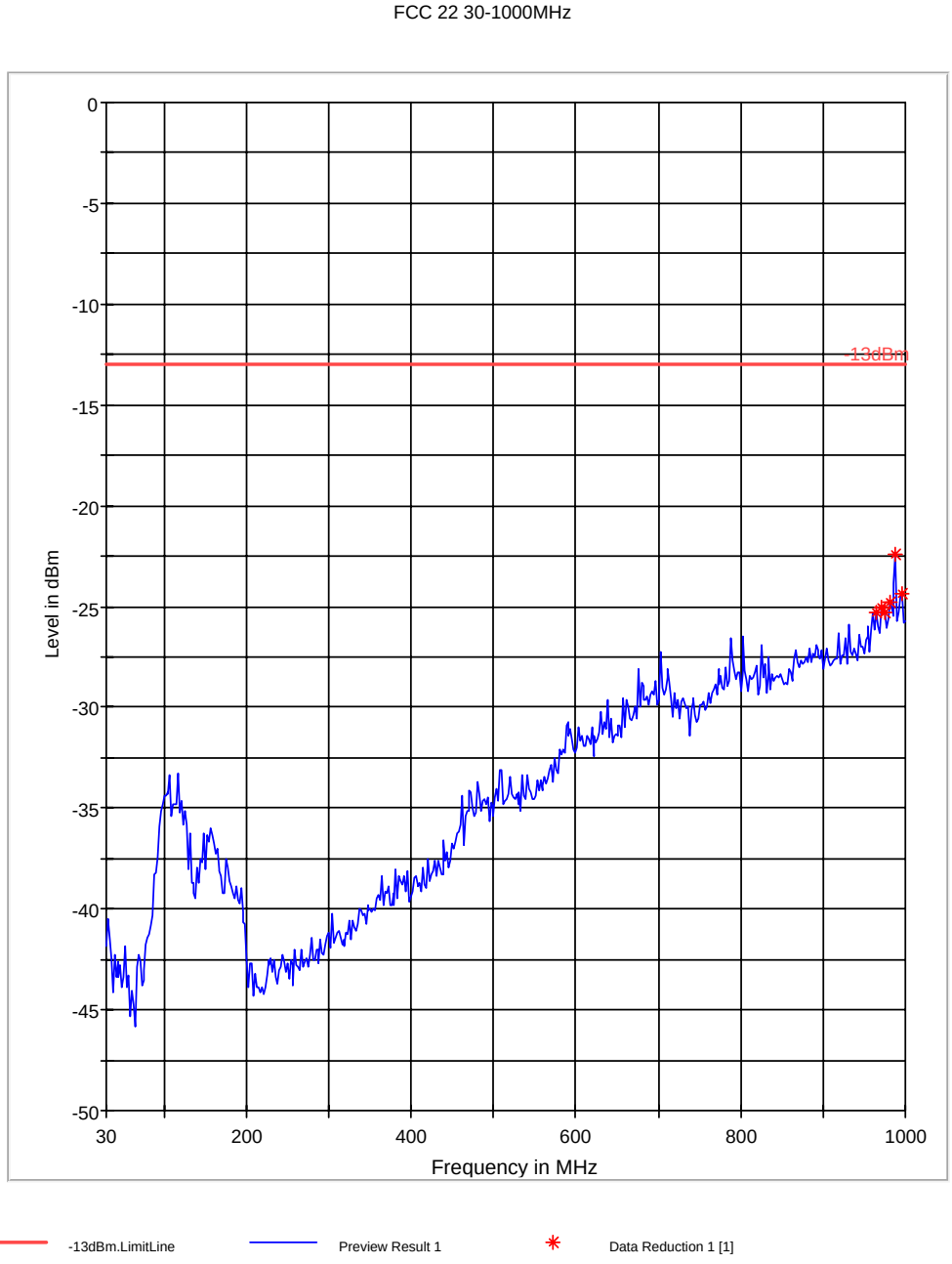
Spurious emission limit –13dBm

USED RBW=100 kHz VBW=100 kHz

Note:

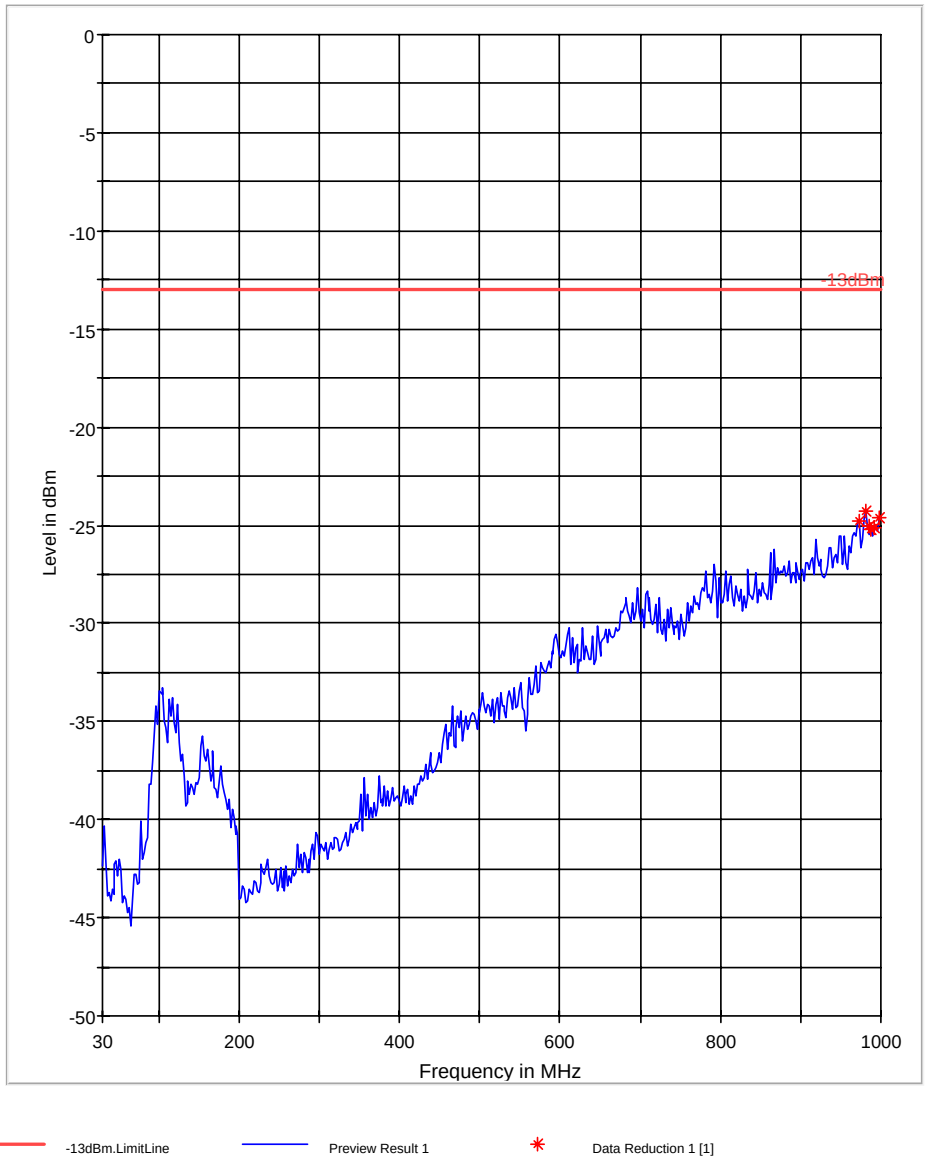
1. This plot contains results of antenna in both horizontal and vertical polarizations

FCC 24 30-1000MHz Low Channel



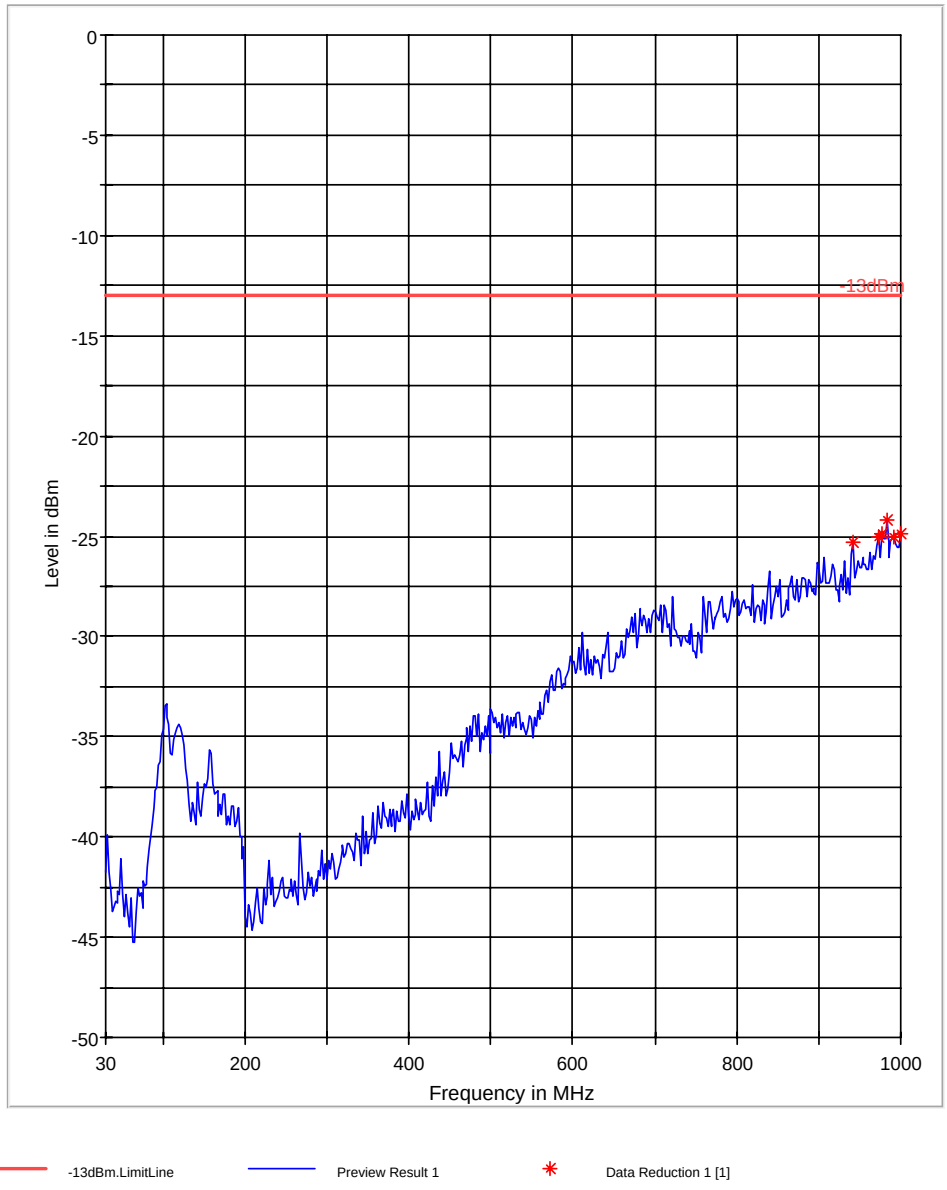
USED RBW=100 kHz VBW=100 kHz
Note: This plot contains results of antenna in both horizontal and vertical polarizations

FCC 24 30-1000MHz Mid Channel



USED RBW=100 kHz VBW=100 kHz
Note: This plot contains results of antenna in both horizontal and vertical polarizations

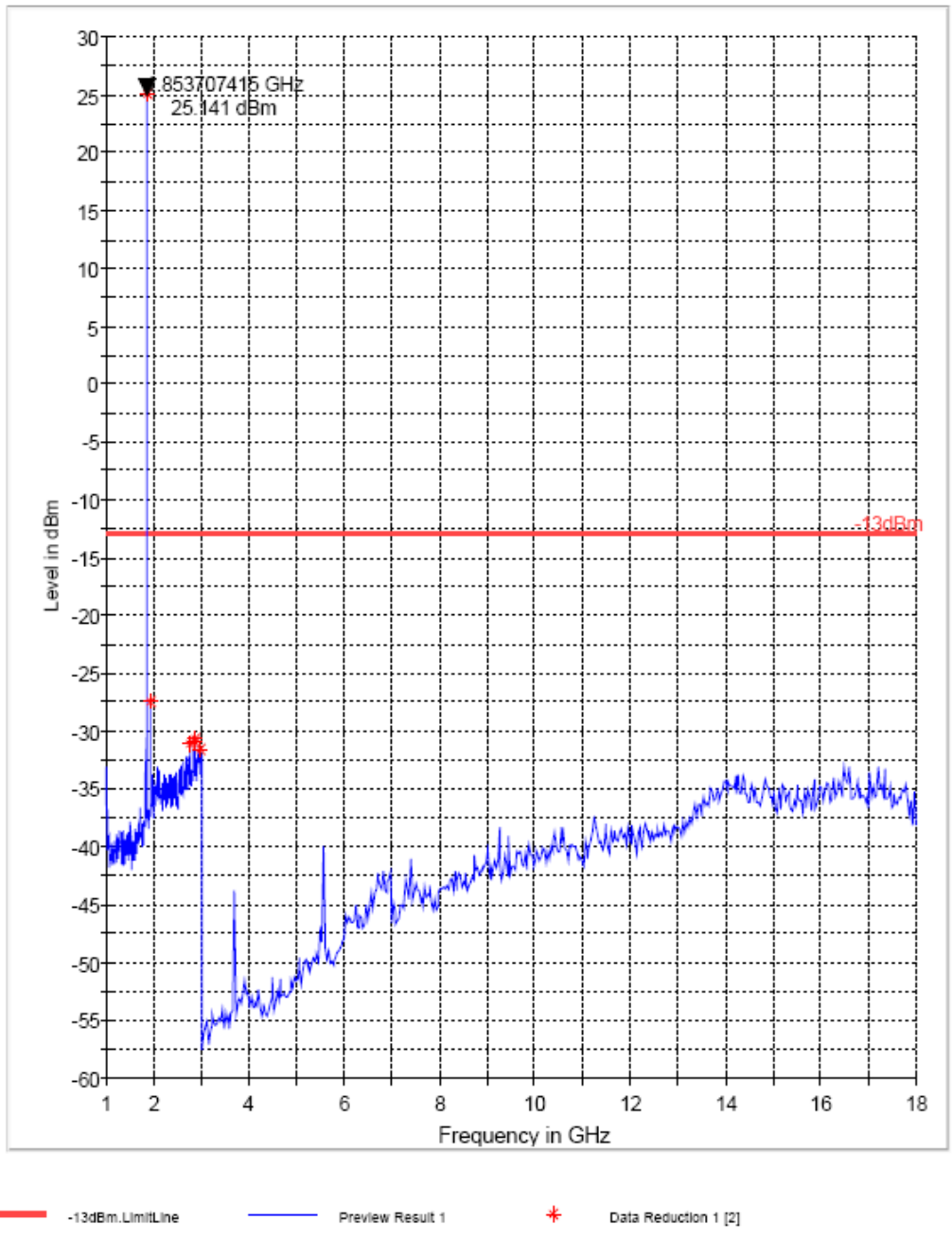
FCC 24 30-1000MHz High Channel



RADIATED SPURIOUS EMISSIONS(CDMA 1900) Tx CHANNEL 512: 1GHz – 18GHz

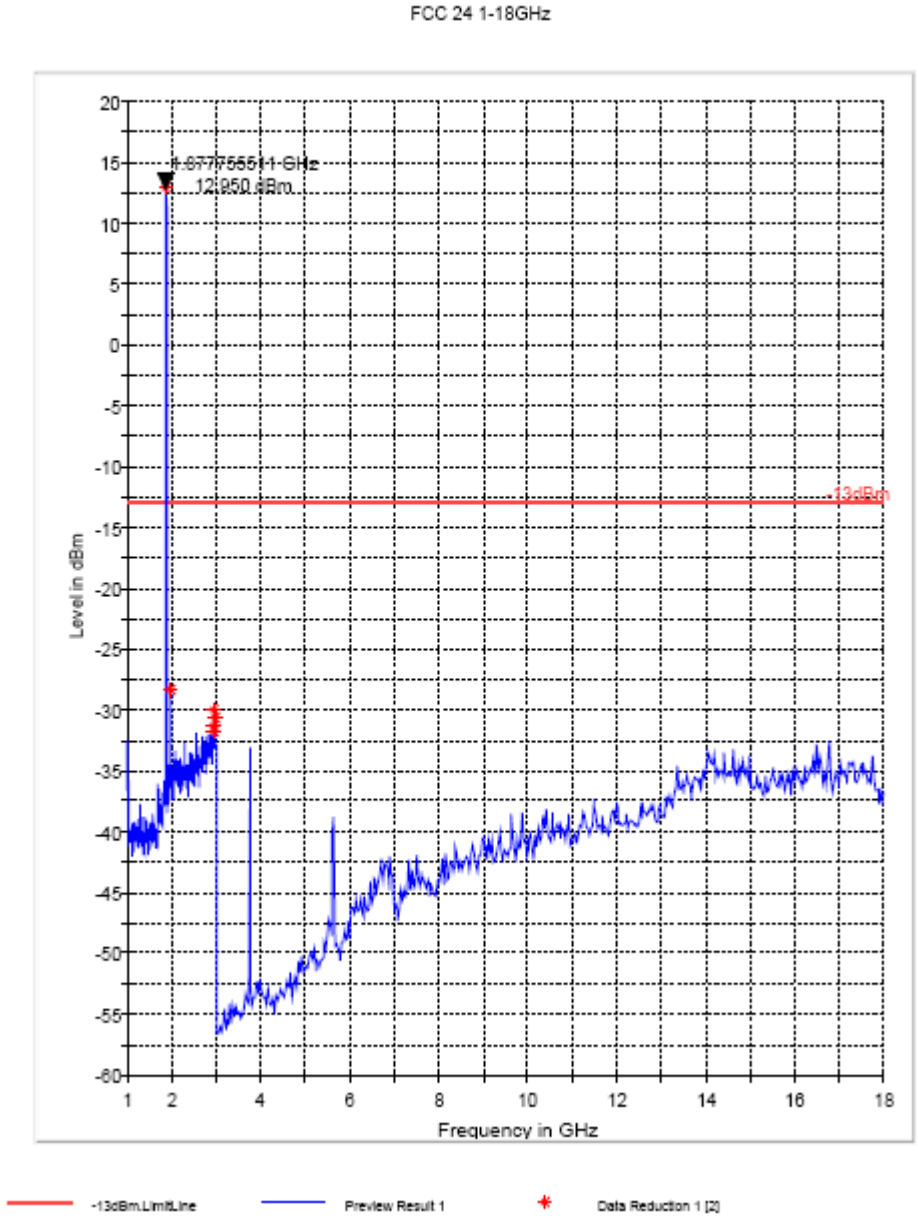
USED RBW=1 MHz VBW=1 MHz
Note:
1. This plot contains results of antenna in both horizontal and vertical polarizations

FCC 24 1-18GHz Low Channel



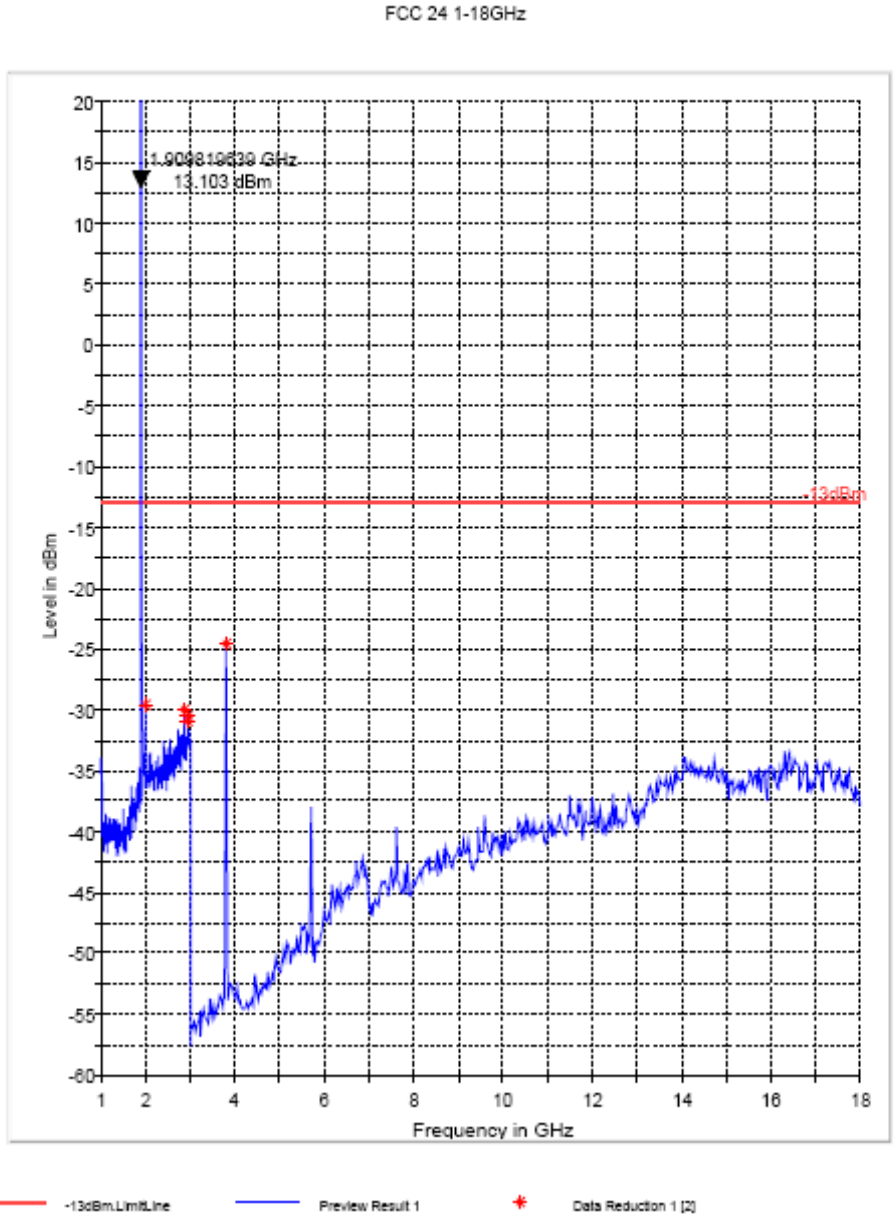
USED RBW=1 MHz VBW=1 MHz
Note: This plot contains results of antenna in both horizontal and vertical polarizations

FCC 24 1-18GHz Mid Channel



Note: This plot contains results of antenna in both horizontal and vertical polarizations
Note: Marker placed on transmit signal

FCC 24 1-18GHz High Channel



4.2.5 Test Results Transmitter Spurious Emission UMTS FDD2:

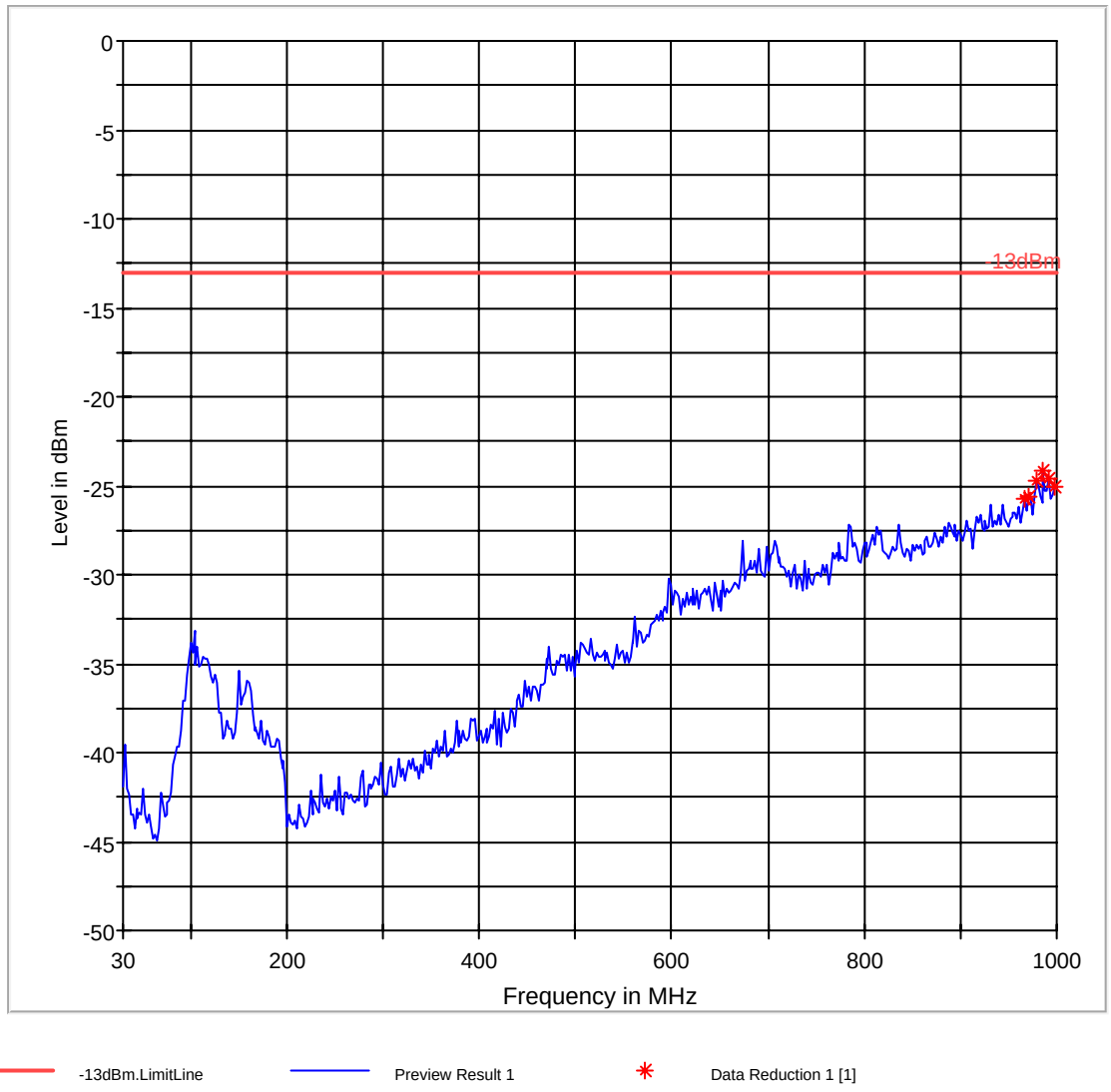
Harmonics	Tx ch-9262 **Freq. (MHz)**	Level (dBm)	Tx ch-9400 **Freq. (MHz)**	Level (dBm)	Tx ch-9538 **Freq. (MHz)**	Level (dBm)
2	**3704.8**	NF	**3760**	NF	**3815.2**	NF
3	**5557.2**	NF	**5640**	NF	**5722.8**	NF
4	**7409.6**	NF	**7520**	NF	**7630.4**	NF
5	**9262**	NF	**9400**	NF	**9538**	NF
6	**11114.4**	NF	**11280**	NF	**11445.6**	NF
7	**12966.8**	NF	**13160**	NF	**13353.2**	NF
8	**14819.2**	NF	**15040**	NF	**15260.8**	NF
9	**16671.6**	NF	**16920**	NF	**17168.4**	NF
10	**18524**	NF	**18800**	NF	**19076**	NF

RADIATED SPURIOUS EMISSIONS (UMTS FDD2) TX: 30MHz - 1GHz

USED RBW=100 kHz VBW=100 kHz

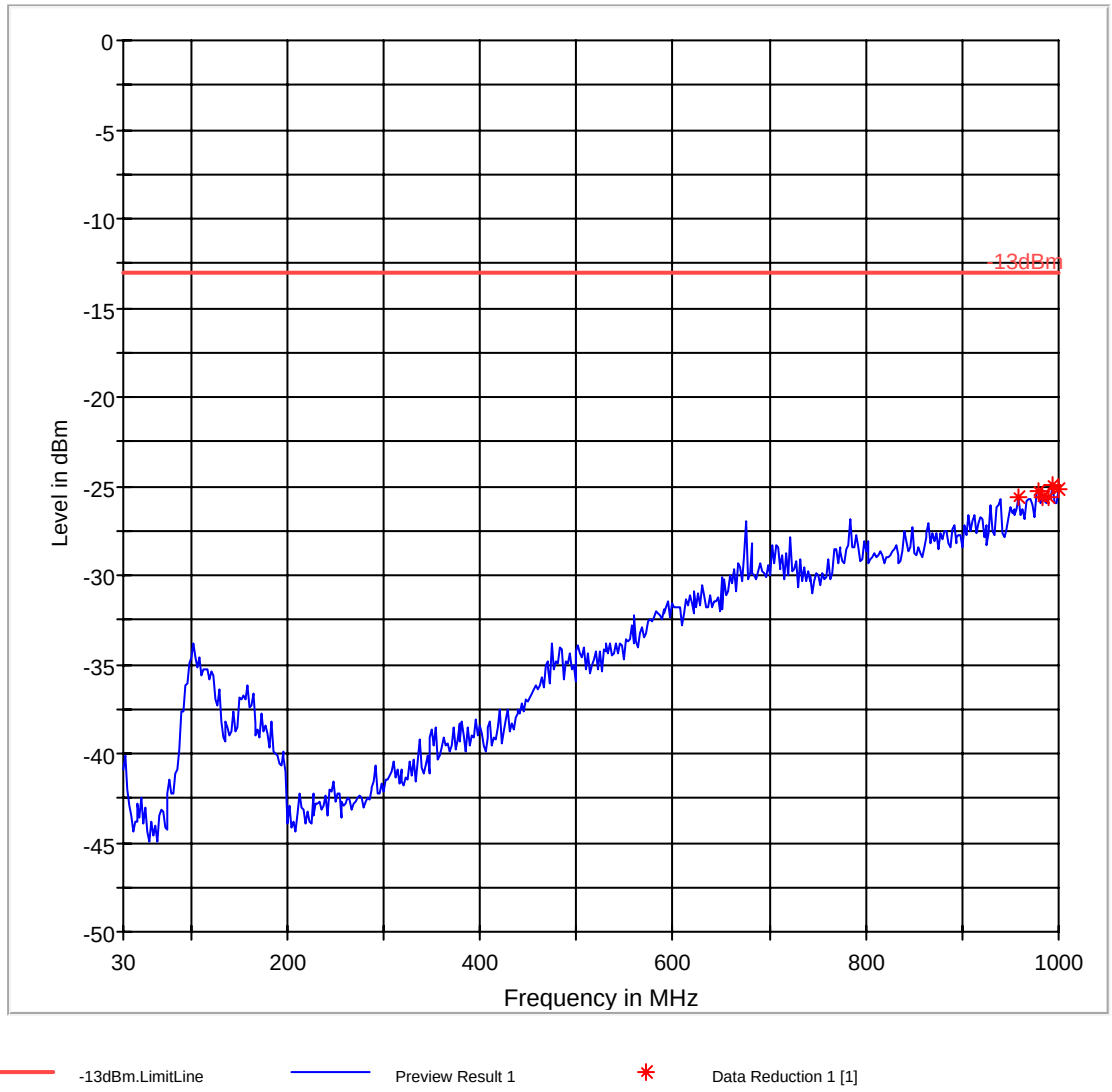
Note: This plot contains results of antenna in both horizontal and vertical polarizations

FCC 24 30-1000MHz Low Channel



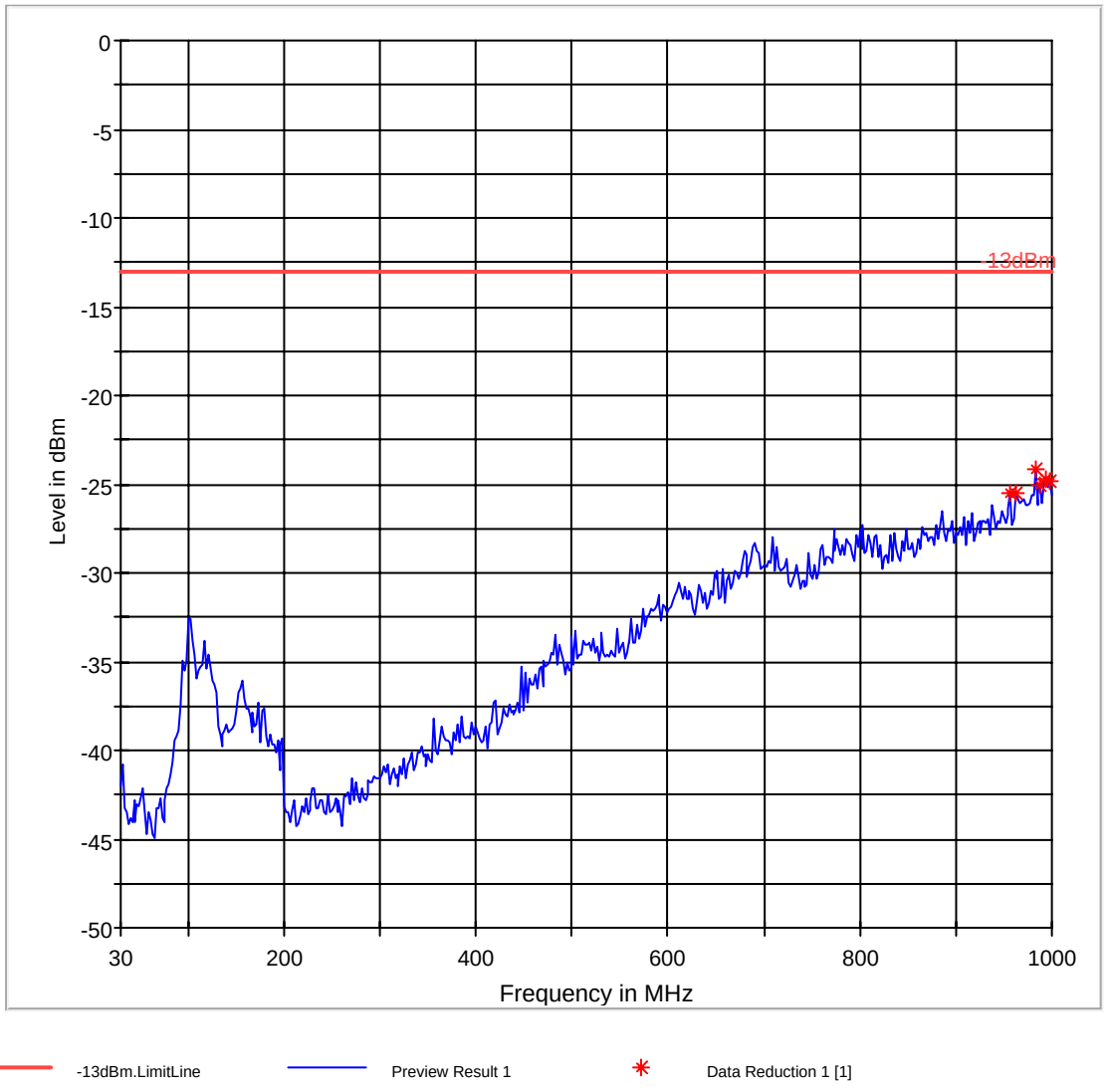
USED RBW=100 kHz VBW=100 kHz
Note: This plot contains results of antenna in both horizontal and vertical polarizations

FCC 24 30-1000MHz Mid Channel



USED RBW=100 kHz VBW=100 kHz
Note: This plot contains results of antenna in both horizontal and vertical polarizations

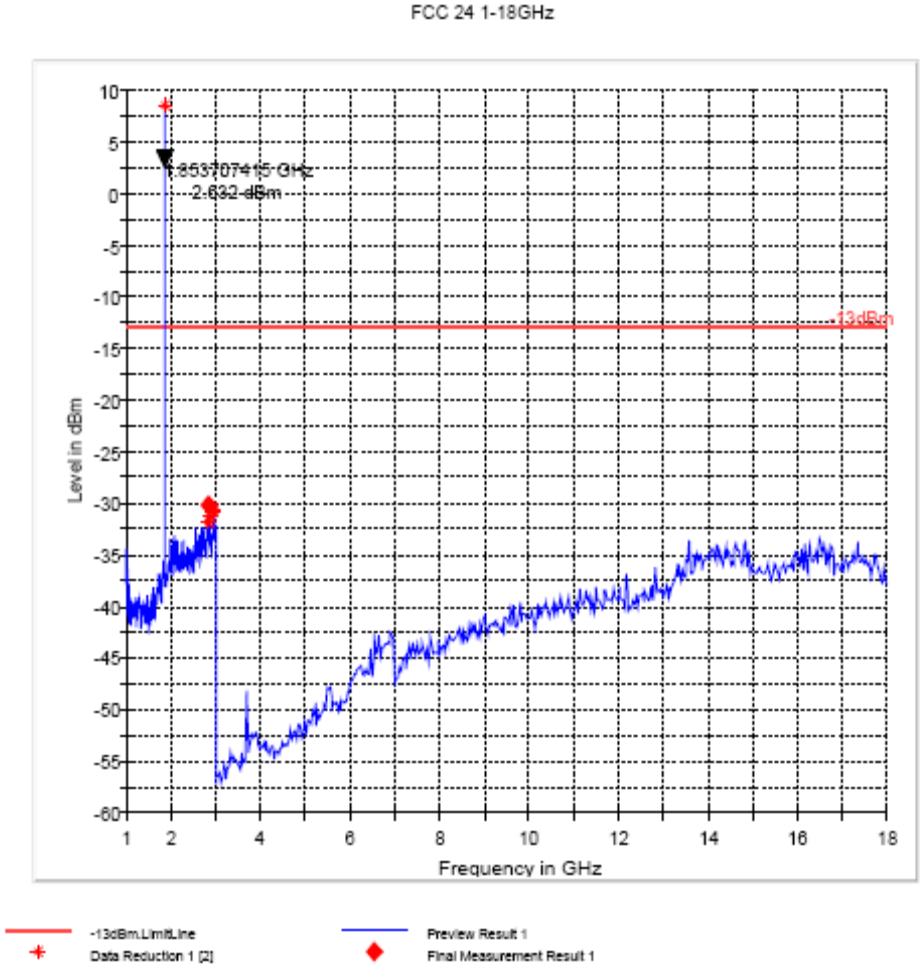
FCC 24 30-1000MHz High Channel



RADIATED SPURIOUS EMISSIONS(UMTS FDD2) Tx CHANNEL 9262: 1GHz – 18GHz

Note: The peak above the limit line is the carrier freq. at ch-9262.
Note: This plot contains results of antenna in both horizontal and vertical polarizations. Polarity where peak is measured is listed in table.

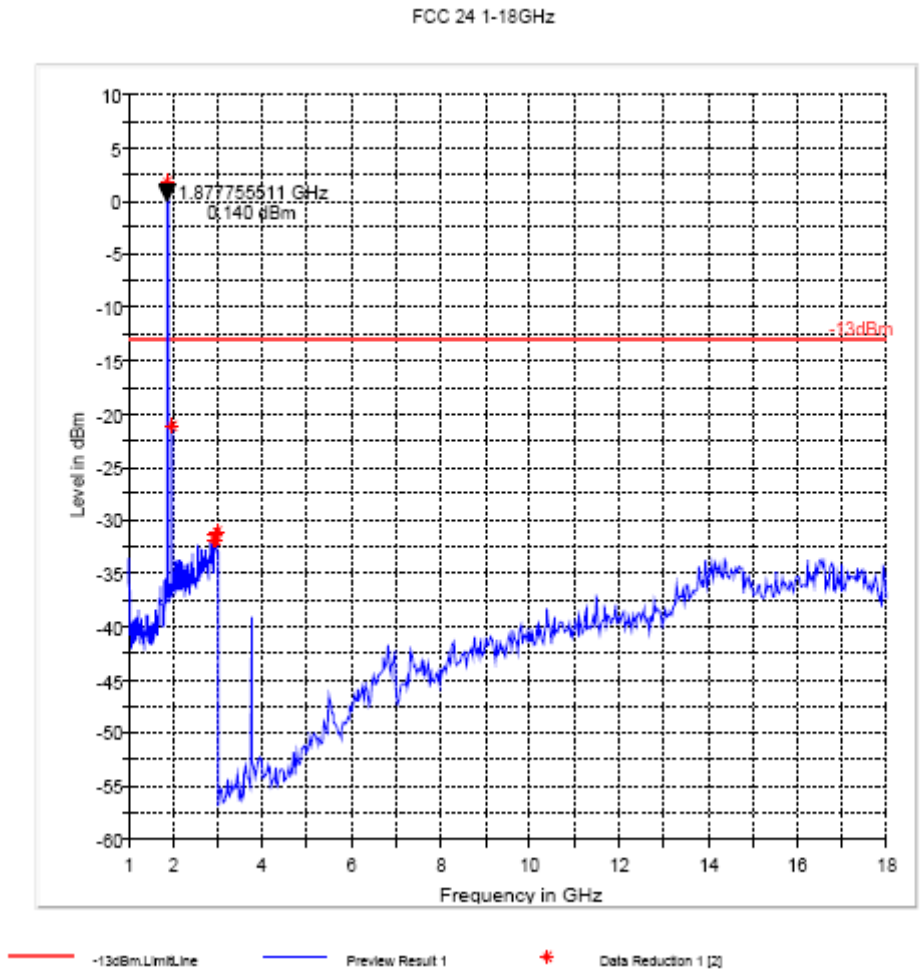
FCC 24 1-18GHz Low Channel



RADIATED SPURIOUS EMISSIONS (UMTS FDD2) Tx CHANNEL 9400: 1GHz – 18GHz

Note: The peak above the limit line is the carrier freq. at ch-9400.
Note: This plot contains results of antenna in both horizontal and vertical polarizations. Polarity where peak is measured is listed in table.

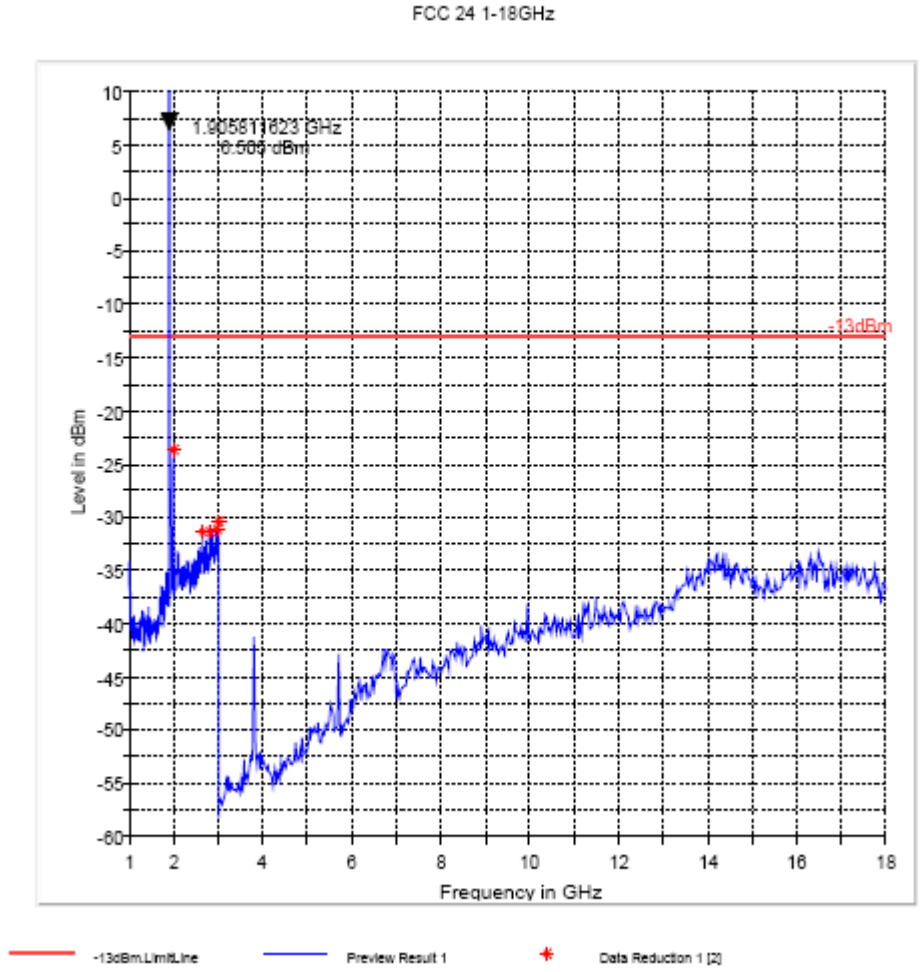
FCC 24 1-18GHz Mid Channel



RADIATED SPURIOUS EMISSIONS (UMTS FDD2) Tx CHANNEL 9538: 1GHz – 18GHz

Note: The peak above the limit line is the carrier freq. at ch-9538.
Note: This plot contains results of antenna in both horizontal and vertical polarizations. Polarity where peak is measured is listed in table.

FCC 24 1-18GHz High Channel

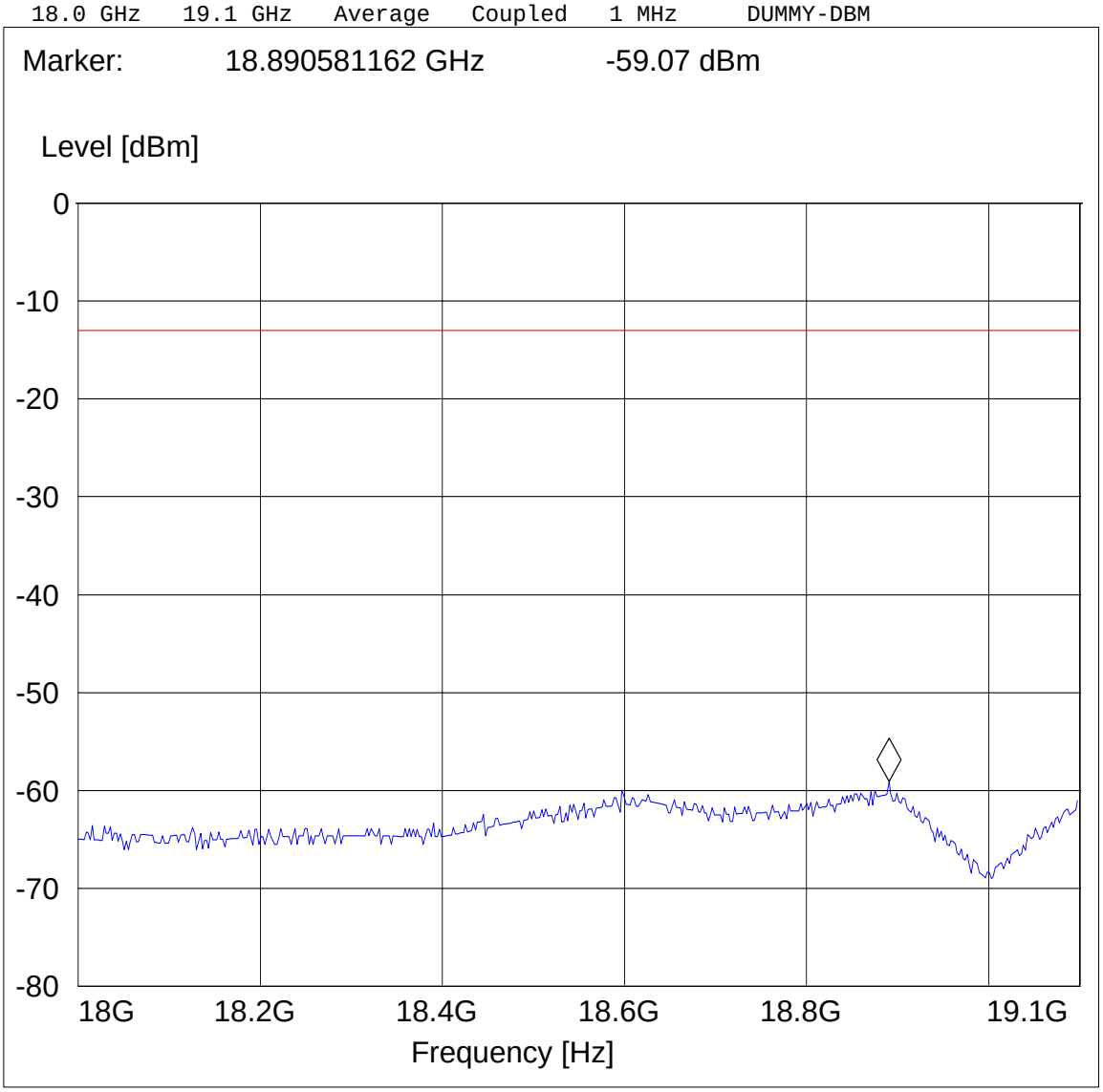


RADIATED SPURIOUS EMISSIONS 18GHz – 19.1GHz

Note: 1.This plot is valid for low, mid & high channels and modes (worst-case plot)

SWEEP TABLE: "FCC 24spuri 18-19.1G"

Start Frequency	Stop Frequency	Detector	Meas. Time	IF Bandw.	Transducer
18.0 GHz	19.1 GHz	Average	Coupled	1 MHz	DUMMY-DBM



5 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No	Instrument/Ancillary	Type	Manufacturer	Serial No.	Cal Due	Interval
01	Spectrum Analyzer	ESIB 40	Rohde & Schwarz	100107	May 2010	1 year
02	Spectrum Analyzer	FSEM 30	Rohde & Schwarz	100017	August 2010	1 year
03	Signal Generator	SMY02	Rohde & Schwarz	836878/011	May 2010	1 year
04	Power-Meter	NRVD	Rohde & Schwarz	0857.8008.02	May 2010	1 year
05	Biconilog Antenna	3141	EMCO	0005-1186	June 2010	1 year
06	Horn Antenna (1-18GHz)	SAS-200/571	AH Systems	325	June 2010	1 year
07	Horn Antenna (18-26.5GHz)	3160-09	EMCO	1240	June 2010	1 year
08	Power Splitter	11667B	Hewlett Packard	645348	n/a	n/a
09	Climatic Chamber	VT4004	Voltsch	G1115	May 2010	1 year
10	High Pass Filter	5HC2700	Trilithic Inc.	9926013	n/a	n/a
11	High Pass Filter	4HC1600	Trilithic Inc.	9922307	n/a	n/a
12	Pre-Amplifier	JS4-00102600	Miteq	00616	May 2010	1 year
13	Power Sensor	URV5-Z2	Rohde & Schwarz	DE30807	May 2010	1 year
14	Digital Radio Comm. Tester	CMD-55	Rohde & Schwarz	847958/008	May 2010	1 year
15	Universal Radio Comm. Tester	CMU 200	Rohde & Schwarz	832221/06	May 2010	1 year
16	LISN	ESH3-Z5	Rohde & Schwarz	836679/003	May 2010	1 year
17	Loop Antenna	6512	EMCO	00049838	July 2010	2 years

6 References

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION, PART 2--FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS October 1**,** 2001.

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION, PART 22 PUBLIC MOBILE SERVICES October 1, 1998.

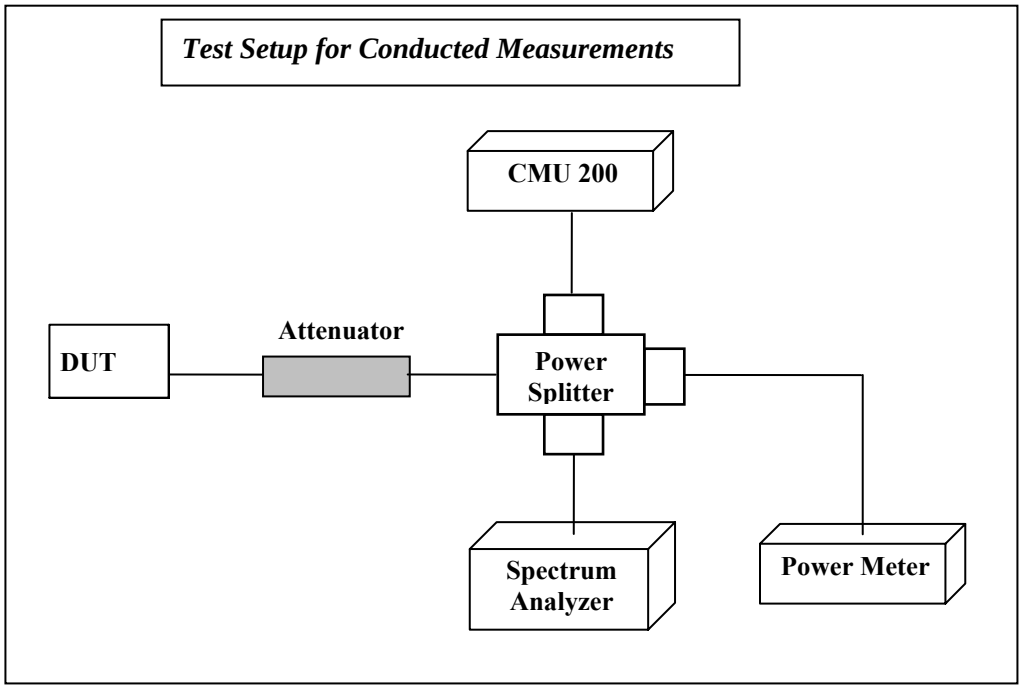
FCC Report and order 02-229 September 24, 2002.

Title 47—Telecommunication, CHAPTER I--FEDERAL COMMUNICATIONS COMMISSION, PART 24 PERSONAL COMMUNICATIONS SERVICES October 1, 1998.

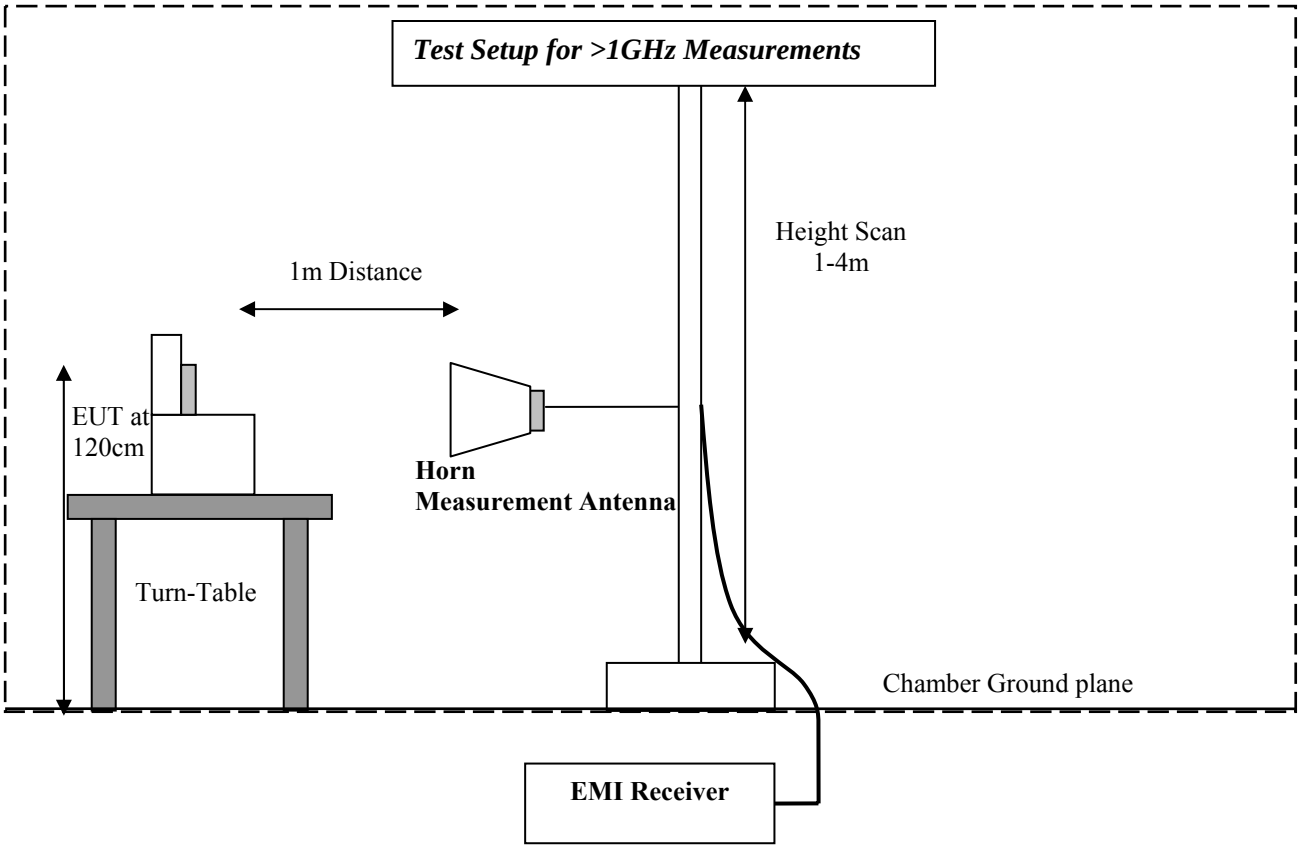
ANSI / TIA-603-C-2004 Land Mobile FM or PM Communications Equipment Measurement and Performance Standard November 7, 2002.

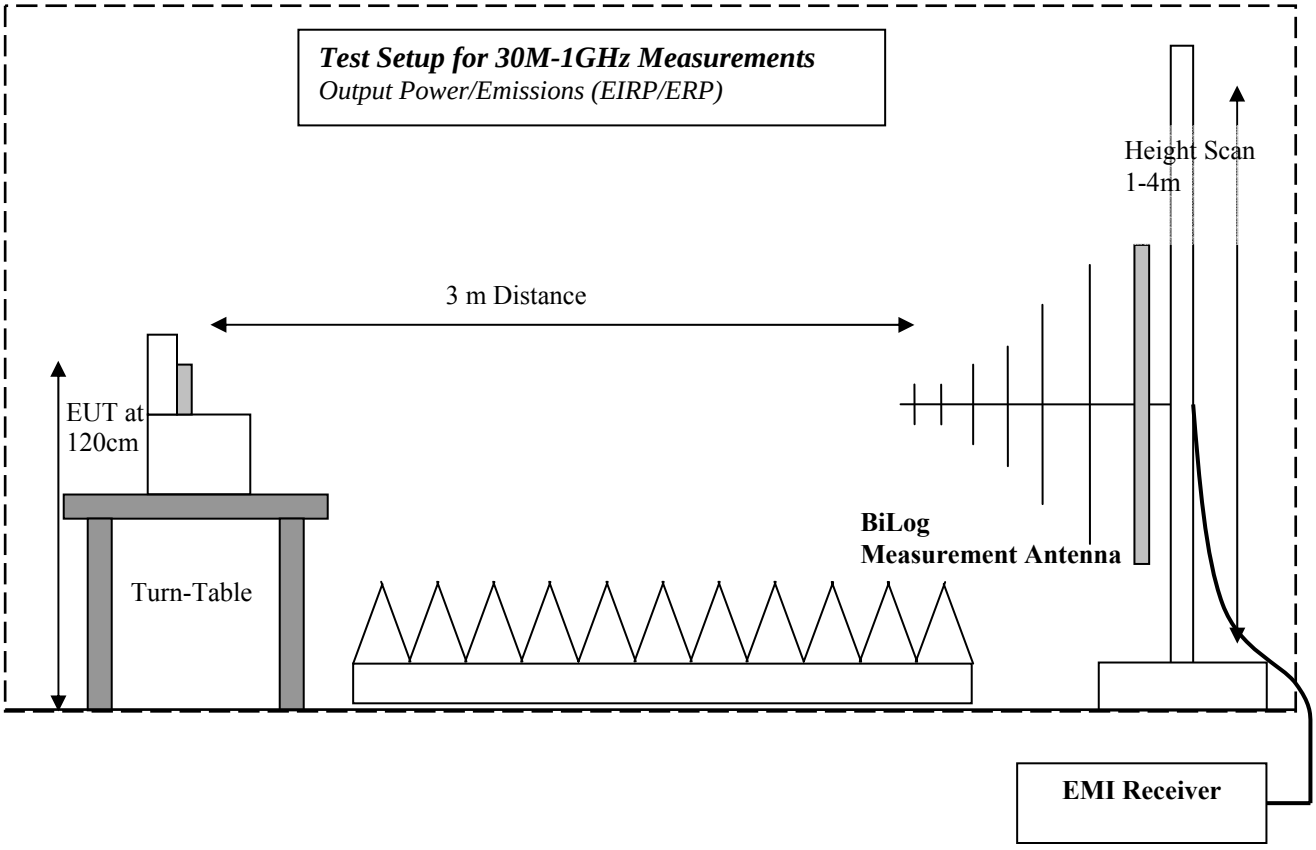
7 BLOCK DIAGRAMS

Conducted Testing



Radiated Testing




Test Setup for 30M-1GHz Measurements
Output Power/Emissions (EIRP/ERP)
Height Scan
1-4m
3 m Distance
EUT at
120cm
Turn-Table
BiLog
Measurement Antenna
EMI Receiver

8 Revision History

2009-11-24 Original Report